NORGES HANDELSHØYSKOLE

Bergen, June 2012

The Impact of the Classical Microfinance Contract on the Poor Entrepreneur

A Field Experiment on Entrepreneurs in Tanzania

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Master Thesis in Economics

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Abstract

This master thesis studies the impact of the classical repayment contract in microfinance, and whether the contract is constraining the investment behavior of the poor entrepreneur. To illuminate how the repayment contract is affecting the short-run investment behavior and further the long-run business outcome of the poor entrepreneur, we use data from a randomized field experiment in Tanzania. In addition, we present a literature review on the dynamics of the repayment contract and recent empirical research on the effect of a more flexible repayment contract on the microfinance institution and the poor entrepreneur. Our study indicates a change of short-run investment behavior by the treatment group, as well as an increase in the long-run business outcomes for the males in the treatment group. These results illuminates that a less strict repayment contract could change the investment behavior of the clients as well as their long-run business outcomes.

Preface

We would like to thank our supervisor, Lars Ivar Oppedal Berge, for your patience as well as constructive guidance. In addition, we would like to thank our “second supervisor”, Bertil Tungodden, for encouraging advice and comments. In addition, we are very grateful for being allowed to participate in “The Choice Lab”. We would also like to thank our Norwegian and Tanzanian colleagues during the data collection process in Tanzania, for sharing a great experience. Last, we want to thank friends and family for recommendations and great advice.

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1. Introduction

With the help of significant enthusiasm and donor support, microfinance has spread around the world with more than 3 500 microfinance institutions (MFIs) collectively serving almost 150 million clients (Daley-Harris, 2009). Anyhow, despite the impressive growth of microfinance, there is limited evidence of microfinance having significant impact on the entrepreneur's growth and poverty rates (Banerjee, et al., 2009; Karlan & Zinman, 2009).

A potential explanation for the limited impact on the growth in the businesses of the poor entrepreneur could be that the classic microfinance loan contract is constraining the entrepreneurs in terms of investment choices. Debt contracts around the world are designed by the banks to reduce the risk of lending. This risk is particularly high for poor borrowers because they are not secured by collateral (Daley-Harris, 2006). One of the traditional ways for MFIs to deal with the lack of collateral of the poor entrepreneur is to design a strict repayment contract. We define a strict repayment contract as a repayment contract in which the repayments starts immediately after loan disbursement and the repayments are frequent. The main argument for having a strict repayment contract is that it constrains present biased clients, while the main argument against is that it discourages some types of investments. In addition, a strict repayment contract is costly and time consuming for both the MFI and the borrower.

Due to the strict repayment contracts in microfinance we expect there to be high-return investments opportunities in the market. A strict repayment contract on the microfinance loan makes relatively illiquid investments riskier as the poor entrepreneur will have a reduced short-run ability to deal with shocks.[1]An illiquid investment is an investment that cannot quickly and easily be converted into cash, especially not when the entrepreneurs are operating in an imperfect credit market. Consequently, due to the strict repayment contract, we expect there to be *risky* high-return investment opportunities in the market. In other words, if the repayment contract is made less strict, the client might choose to take more

[1] We follow Field et al. (2011) that suggest an environment in which clients face borrowing constraints and in which riskier investments yields higher return. Field et al. (2011) also support this by case study evidence. The assumption that riskier investments yield higher returns differs from much of the theoretical microcredit literature. Another way of explaining why the high-return investments are not taken by the borrower with a strict repayment contract is that these high–return investments might not generate sufficient profits in time for the frequent repayments of the loan.

risky high-return investments, because the less frequent repayments give him more time to deal with potential shocks. We follow Field et al. (2011) and anticipate that business investments are relatively more risky and yield higher return than household investments. In turn, we divide business investments into short- and long-term business investments. We expect that long-term business investments are more illiquid than short-term business investments. Hence, we assume that long-term business investments are more risky and high-return investments than short-term business investments. In this thesis we shed light on whether the strict repayment contract of the microfinance loan inhibit entrepreneurship, and therefore the potential impact of microfinance, by making high-return investments too risky for poor borrowers.

We access data from a field experiment on poor entrepreneurs in Tanzania. The field experiment is a part of the project "Teaching entrepreneurship to microfinance clients: Financial and human capital for development". Kjetil Bjorvatn, Bertil Tungodden and Lars Ivar Oppedal Berge from The Norwegian School of Economics are in charge of this long-term project. We were a part of this research project, being research assistants collecting data for the long-term follow-up in 2011. The field experiment is a randomized study, where clients in one of the Tanzanian microfinance institutions, PRIDE, were randomly assigned to a business grant.[2] The business grant can be considered as a "loan" with a favorable repayment contract. The business grant has no repayments and an indefinite grace period. Consequently, we enlighten the effect of a less strict repayment contract, through the effect of the business grant, and examine the short- and long-run effects on investment behavior and business outcome of the clients.

The intervention led to a significant change in the investment behavior and the business outcome of the clients. In the short-run, the long-term business investments increased significantly as a response to the treatment, respectively by 90 and 60 percent for men and women. We also observed an indication of reduction in both short-term business investments and household investments. In terms of business outcome in the long-run,

[2] The project also randomly assign microfinance clients to business training, however, this is part of the project is not the focus in this thesis.

treated males increased their total number of businesses.[3] The increased total number of businesses could make the client more diversified and we expect diversified clients to be better suited for handling shocks. Due to this we expect the increase in total number of business to be a welfare gain for men in the treatment group. Further, there is an indication of the intervention having a positive impact on profits. Thus, the intervention had a significant impact on the investment behavior of the treatment group in the short-run as well as on the long-run business outcome for the males in the treatment group. Due to these findings, we assume that a less strict repayment contract could enable the clients to change their investment behavior into more risky high-return investments, which in turn could have a positive effect on long-run business outcome.

This thesis is organized as follows. Chapter 2 gives a presentation of theory and existing empirical evidence on the repayment contract in microfinance. Chapter 3 describes the methodology of randomization. Chapter 4 presents the context of the project, with a brief introduction of Tanzania, the microfinance institution PRIDE and the typical micro entrepreneur in this setting. Chapter 5 explains the experimental design. Chapter 6 provides the descriptive, empirical and qualitative analysis. Chapter 7 concludes.

[3] There are no significant effect on women's' business outcome and we suspect that the average women in our sample are constrained of other factors than the repayment contract, resulting in no effect of the treatment on long-term business outcome.

2. Motivation and Literature Review

This chapter explains how a less strict repayment contract affects both the borrower and the lender. First we present how the classical microfinance loan contract is designed to deal with information problems. Furthermore, we discuss how a more optimal lending contract would look like, demonstrating that both lenders' and borrowers' incentive should be taken into account when designing the lending contract. Thereafter a discussion on how a less strict repayment contract would affect the microfinance institutions (MFIs), as well as recent empirical research on the effect on the default rate, is presented. Thereafter the focus is on how a strict repayment contract distorts the investment behavior of the borrower, which in turn can affect long-turn business outcome. Further, we present one recent empirical paper which investigates the change in investment behavior due to the less strict repayment contract. Last, we summarize the empirical evidence of a strict repayment contract on default rate and investment behavior.

2.1 Classical microfinance loan contract

Information problems play a large role in the design of lending contracts, because the lenders need be able to discern borrower quality, monitor behavior and enforce repayment in order to reduce default risk sufficiently to make lending profitable (Stiglitz & Weiss, 1981). The use of collateral is a common solution to address the problem of lack of information in lending contracts (Barro, 1976; Benjamin, 1978). If the borrower has signed up collaterals, the lender would be able to seize the collaterals in the event of default. However, because poor entrepreneurs do not own valuable assets, they are not able to display valuable collateral to the lender. Consequently, the lack of collateral among the poor provides an additional cost for the bank in case of default, because lending to the poor without sufficient information about their borrower quality is risky. Additionally, the poor entrepreneurs lack the ability to signal their borrower quality through information from documents and records in the way borrowers from more developed system do. The lacking ability of the poor entrepreneurs to signal their borrower quality increases the risk and information problems when lending to poor entrepreneurs.

The idea of microfinance is to lend money to the poor entrepreneurs who are excluded from the formal credit market. To reduce risk and the information problem in microfinance it is important to induce the right set of incentives for borrowers to fulfill their contractual obligations. Mohamed Yunus founded Grameen Bank in 1983 with the intention to "bank the un-bankable". Grameen Bank introduced the poor to the credit markets by applying loan contracts very different from the standards lending contracts provided by formal banks. Traditionally most of the microfinance institutions have followed the initial Grameen Bank way of structuring the loan contracts. To deal with the information problem the MFIs has typically taken all or some of the characteristics listed below into account when designing the lending contract.

a. Group loans
b. Public repayments
c. Dynamic incentives
d. Frequent repayments
e. No grace period

The classical microfinance lending contract is a way of monitoring the borrowers before and after the loan is taken (Armendáriz & Morduch, 2010). The main difference between the loan contracts in the formal banks and the classic microfinance lending contracts is that the MFIs enforce group loans (a). Group loans are loans where the group members are responsible for each other's' loan. The requirement of group loan puts some of the information problem over to the borrower and their fellow clients. As clients are asked to form their own loan groups it makes the individuals gather information on their fellow group members, making sure that the ones they form a loan group with is able to repay the loan, in this way the group loan is monitoring the clients before the loan is taken. Public repayments within the groups (b) have an additional effect on peer pressure, making it harder for the clients to default because the group members can observe and convince the client to repay. If one of the group members is not able to repay the loan, the group members have to help. Thus, the lending contract also monitors the borrower to repay the loan *after* the loan is taken.

A dynamic incentive (c) provides the lender with an opportunity to give the borrower a reward or penalty, depending of last periods' performance. A dynamic incentive is often included in the typical microfinance contract to provide an incentive for the borrower to not

default. A typical dynamic incentive used in microfinance contracts are loan-ladders, where the borrower gets access to larger loans, lower interest rates and lower terms to maturity in subsequent loans, if the client is repaying on time for a longer period. The loan-ladder therefore creates an incentive for the borrower to not destroy the borrower-lender relationship.

The last characteristics of the classic microfinance loan contract are frequent repayment (d) and no grace period (e), i.e. repayments starting immediately after loan disbursement. The existence of both (d) and (e) in the lending contracts can create an early warning system, because the credit officers and the group members get to know the entrepreneurs well by seeing them face to face on a regular basis. The institutions and group members then know them better, which in turn are securing the lender with information. Another important function of (d) and (e) in the lending contract is that it is constraining clients that are present-biased. Present biased clients is one of the main reasons for the MFIs impose strict lending contracts, the problem with present biased clients will be discussed later in this chapter.

2.1.1 Strict repayment contracts

The most well-known way to monitor poor borrowers is group loans, but as the microfinance industry moves increasingly toward individual loans, other mechanisms are becoming more important. Today, one of the prominent ways to monitor borrowers is the frequent loan repayments (Pearlman, 2010). Loans with the characteristics of frequent repayments (d) and no grace periods (e) are loans that are repaid weekly or bi-weekly and starting a week or two after loan disbursement. We define the existence of (d) and (e) in a contract as a *strict repayment contract.* The strict repayment contract is designed by the MFI to keep the default rate low (Armendáriz & Morduch, 2010). However, it is appropriate to explain through theory on optimal lending contracts why the MFI should also take the incentive of the borrower into account when designing the repayment contract.

2.2 Optimal loan contracts

Optimal contracts exist primarily in the neoclassical theory. The fundamental assumptions of the neoclassical economy are rational agents, perfect market information and individuals maximizing utility while firms are maximizing profits (The Concise Encyclopedia of

Economics, 2012). In an environment where the neoclassical assumptions are present the principal (lender) can perfectly observe the level of effort performed by the agent (borrower). [4] Thus, the principal can offer an optimal contract with incentives for the agent to put an optimal effort into repaying the loan. The principal must only make sure that the agent is willing to sign the contract by offering him at least his reservation utility (Kreps, 1990). The optimal lending contract is achieved when the incentives are optimal for both principal and agent (Dutta & Radner, 1994).[5]

However, the assumptions for perfect markets almost never seem to be true. Transaction costs, taxes, asymmetric information, irrational behavior and bankruptcy costs are factors that contribute to fail the assumption of perfect markets (Myer, 1977; Rodriguez-Meza, 2000). The imperfect credit markets in poor countries are often characterized by these factors to a larger extent than more developed countries are.

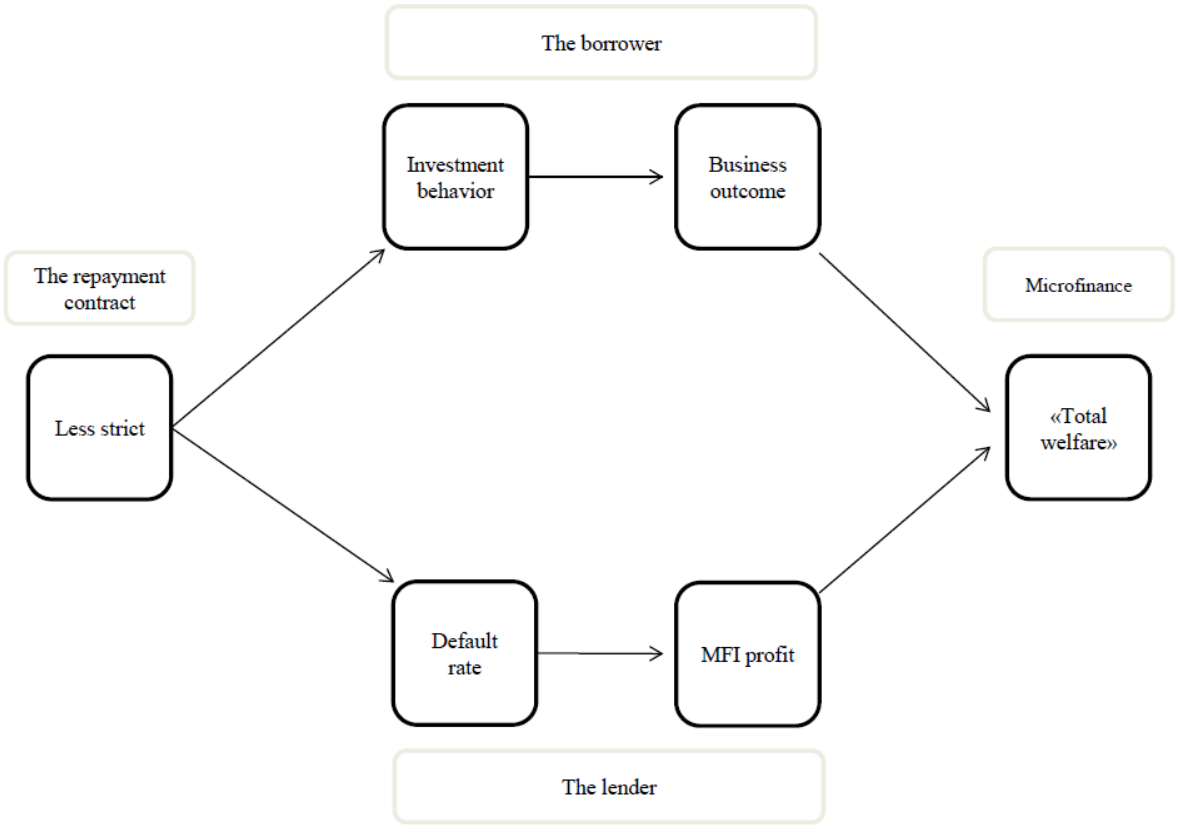
The challenge of the MFIs is to get rid of the information problem between lender and borrower while still providing credit products that the poor borrower wants (Pearlman, 2010). It is therefore especially important for the MFIs to understand the imperfect credit markets, making the lender able to implement a more accurate repayment contract with the right set of incentives for both lender and borrower. [6] Hence, a more optimal microfinance lending contract takes *both the incentive of the lender and borrower* into account. The incentive for the lender is to keep the default rate low, while the incentive for the borrower is to be able to take a high-return investment.

Due to the imperfect credit market it is particularly difficult to design a more optimal lending contract for both borrower and lender. As explained in the introduction a strict repayment contract could constrain the investment behavior of the borrower. In Figure 2.2 we present the dynamics of introducing a less strict repayment contract on both the lender and borrower. Further, in the long-run, the less strict repayment contract could create a welfare gain for

[4] We explain the mechanisms in the neoclassical theory in the light of a principal-agent relationship. A principal-agent relationship is a relationship between two economic agents with different objective functions in which one party, the principal, delegates to another, the agent, some actions (control over resources).
[5] In this perfect world the interest rate would reflect the lender's opportunity cost of funds, and the resulting level of borrower's investment is optimal (Rodriguez-Meza, 2000).
[6] Microfinance institutions have challenges to get rid of the information problem and provide credit products that the poor lender wants at the same time. The solution may lie in "flexible inflexibility", which provides small grace periods, giving borrowers some breathing space while maintaining a fairly strict repayment structure (Mullainathan & Krishnan, 2008).

respectively the entrepreneur and the MFI. The welfare gain from both the entrepreneur and the MFI would in turn affect the "total welfare" in microfinance.[7]

Figure 2.2: The dynamics of a less strict repayment contract on "total welfare" in microfinance



Note: This model shows the mechanisms of a less strict repayment contract on "total welfare" in microfinance. A less strict repayment contract affects the short-run investment behavior and the long-run business outcome of the borrower. A less strict repayment contract also affects the default rate and the profits of the lender. Both, the borrower and lender, contribute to the "total welfare" of microfinance.

There are relatively few papers studying the effect of a less frequent repayment contract. Anyhow, there is recent empirical research on how the lender is affected by a less strict repayment contract (the lower path of the model in Figure 2.2). There is, to our knowledge, only one paper investigating how the borrower is affected by a less strict repayment contract (the upper path in the model in Figure 2.2). As the long-run business outcome of the

[7] Only the welfare of the borrower and the lender is taken into account in "total welfare". There can be others experiencing welfare gains and losses associated with microfinance, e.g. neighbors and customers etc. However, we only focus on the welfare gain of the borrower and the lender.

borrower is a part of the "total welfare" of microfinance, we find it important to further investigate the effect of a less strict repayment contract on short-run investment behavior and long-run business outcome of the borrower. However, it is appropriate to present the effect of a less strict repayment contract on the microfinance institution because it is the MFI that actually is designing the contract.

2.3 The effect of a less strict repayment contract on the microfinance institution.

From the optimal contract discussion above, we recall that the lender designs a strict repayment contract to keep the default rate low.

2.3.1 Present biased preferences

One of the main arguments for MFIs to enforce a strict repayment contract is that the clients might have present biased[8] preferences. Present biased preferences can make the clients' derail from their long-term plan of repayment of the microfinance loan, due to the passage of time. A present biased client has preferences of receiving immediate gain which is violating his long-term preferences (Rabin, 1998). A present biased individual is time-inconsistent and give more weight to the period when it arrives than in any previous periods (Gugerty, 2007). Present biased preferences is violating one of the assumptions in the neoclassical model of individuals being rational, as one of the characteristics with rational individuals is that they are time-consistent and discount streams of utility exponentially (Rabin, 1998).

Present biased preferences can be evident for all type of individuals, however, the problems of present biased preferences might have a greater impact on the poor, because of the more constrained context they live in (Mullainathan, 2004). For example, if the poor experiences a shock they are more likely to derail from their long-term plans of repaying the loan because they have few alternative sources of money. Thus, the fact that the client is constrained on money increase the chance of the client using the loan differently than first anticipated.

[8] It is possible to divide present biased individuals between naïve and sophisticated (Rabin, 1998). Sophisticated individuals are aware of their irrational behavior and will try to find ways to manipulate future options. For example, time-inconsistent, sophisticated microfinance clients will be aware of the future temptations that might arise and be able to set aside the money that is needed for repayment. Naïve present biased clients will not identify these future temptations and will have problems holding on to the money that was intended for repayment.

The frequent repayment contract makes the size of each repayment smaller, which gives less immediate gain from defaulting and the easier it is to have sufficient funds to repay the loan (Fischer & Ghatak, 2010). Additionally, the closer the repayment is to the loan disbursement, the less time the present biased clients have to be tempted to derail from the long-term plan of repaying the loan. Furthermore, loans that have a strict repayment structure can be easier for the clients to handle, the regular meetings can create a discipline for clients that are not used to formal deadlines and it can prevent attention problems (Karlan & Morduch, 2009). [9] This indicates that strict repayment schedules through smaller repayments and a shorter time span decrease the default rate for the present biased clients. [10]

2.3.2 Transaction costs

Nevertheless, one of the arguments against a strict repayment contract is the high transaction costs. Transaction costs are costs of participating in a market such as administration costs, traveling costs, opportunity costs etc. The strict lending contract in microfinance imposes relatively large transaction costs on both borrower and lender. The lender has more paper- and administration work associated with each borrower when the repayment schedule is frequent. Additionally, the borrower has high opportunity costs being away from the business frequently attending the group meetings. The microfinance institution might be far away and transportation cost for the borrower must also be taken into account. According to Shankar (2006) and Karduck and Seibel (2004) weekly collection meetings account for as much as one-third of direct operating expenses for the borrower. As the less strict repayment contract reduce the transaction costs, the total costs for borrower and lender will be reduced, which in turn might reduce the default rate.

[9] A strict loan schedule will also remove the money from the household and friends and family that might be interested in the money (Armendáriz & Morduch, 2010). In addition, strict lending contracts can also be an alternative for present biased individuals that are not able to save. Frequent repayments enable them to convert small sums into larger sums, and can be used as a saving product.

[10] Fischer and Ghatak (2010) have studied the theoretical foundation for the frequent repayment schedule and claims that frequent repayments have a two-sided effect on present biased clients. The authors recognize that more frequent repayment makes the burden smaller, which should increase repayment from present biased clients. At the same time dynamic incentives, like further access to credit, are discounted more heavily by present biased clients. A strict repayment structure of several small installments would make the repayment-reward further away from the repayment decision. This can result in less incentive for repayment, because the present biased clients will not ascribe the reward as much weight as time-consistence clients (Fischer & Ghatak, 2010).

2.3.3 Recent empirical research on the default rate

Silwal (2003) study the correlation between the repayment frequency and default rates in Nepal. The author look at repayment performance in different village banks and 11 percent of the loans were not repaid in the end of the loan period when installments were done weekly, while the rate was twice as high when the loans were paid in a single lump sum at the end of the loan's maturity.

In addition, some of the institutions that have made the contracts less strict reports on increasing default – and delinquency rate. The microfinance institution BRAC in Bangladesh experimented moving from weekly to twice per month repayments. The effect was increasing delinquencies and they quickly went back to its weekly scheme (Armendáriz & Morduch, 2010). In Bolivia the microfinance institution BancoSol had to increase its portion of clients on frequent repayments, in response to high default rates (Gonzalez-Vega, et al., 1997).

Even though the empirical evidence presented above shows an increase in default rate when the repayment contracts are made less strict, there is recent empirical evidence showing no change in the default rate, actually even a slight decrease. Field and Pande (2008) randomly assigned new borrowers to traditional weekly payments and monthly payments in a field experiment in India. They find no difference in repayment on the borrowers with monthly repayments. However, the results are only true for small-size loans and new borrowers, the authors discuss how repayment frequency and fiscal discipline might be more important for clients that get larger loans. Moving from weekly repayment to monthly repayment schemes means that the transaction costs is reduced for both lender and borrower, and therefore both will save money turning over to less frequent schedules (Field & Pande, 2008).

McIntosh (2008) extends the result from Field and Pande with a study of a Ugandan microfinance institution in which the bank offered its village clients a choice between weekly and bi-weekly repayment. McIntosh finds no drop in default rate, actually a slight improvement. Since the biweekly repayment also lowers transaction costs on both sides of the contract, the result indicates significant welfare gains (McIntosh, 2008).

There are empirical evidence of both an increase and no change at all on the default rate when the repayment contract is made less strict. Hence, the results of a less strict repayment contract on the default rate are ambiguous.

2.4 The effect of a less strict repayment contract on the poor entrepreneur

From the optimal loan contract discussion, we recall that the incentive of the borrower should be taken into account when designing the repayment contract. We expect the incentive of the borrower for taking a loan is to be able to take a high return investment in the market. Thus, we anticipate that the repayment contract affects the investment behavior of the borrower.

2.4.1 Investment behavior

Only a small and mainly theoretical literature examines the role of a strict repayment contract in reducing default in MFIs, but the focus is on channels other than investment behavior (Fischer & Ghatak, 2010). Nevertheless, the idea that the structure of lending contracts influences entrepreneurial risk-taking and investment behavior exists in many corporate finance models. The empirical literature presents both more and less risk taking in investments when relaxing the strict repayment contract (Barclay & Smith, 1995; Brockman, et al., 2010). Anyhow, there are great differences between the microfinance businesses we investigate and large firms discussed in the corporate finance literature, e.g. the risk and information problem is much higher in the microfinance businesses. Thus, as mentioned in the introduction, we expect that there are many high-return illiquid investment opportunities in the microfinance market due to the strict repayment contract. We therefore assume more risk-taking by the poor entrepreneur when relaxing the repayment contract.

Further, we explain how a strict repayment contract can distort the investment behavior of the borrower in the framework of asymmetric information. Asymmetric information occur when the lender have different information than the borrower. In the existence of asymmetric information the terms of the lending contract a bank charges affect the risk of the pool of loans by either: 1) sorting potential borrowers (adverse selection), or 2) affecting the actions of the borrowers (moral hazard) (Stiglitz & Weiss, 1981). We expect that there exists

asymmetric information if the lender does not take into account the incentive of the borrower when designing the lending contract. If the lender only cares about his incentive, a low default rate, the lender would design a strict repayment contract to reduce the potential high-risk of the borrower.

We anticipate that a potential borrower would apply for a loan at the MFI if he finds a high-return investment in the market. Due to the lack of information on the poor borrower the lender offers a strict repayment contract. Then the potential borrower has the option of either chose to not borrow, because it's too risky to take the high-return illiquid investment with a strict repayment contract, or chose to change the investment behavior by taking a less risky investment with relatively low potential return. If the borrower chose to change his investment behavior he would be able to repay the loan with the strict repayment contract, and reduce the risk of default. However, the high-return investment is not taken by the borrower. This might lead to reduced growth in his business.

The first option of the borrower is causing adverse selection as the risky borrowers would chose to not borrow and the borrowers actually borrowing from the MFI would take less risky investments. The second option of the borrower is causing moral hazard[11] because a strict repayment contract changes the investment behavior of the borrower into taking less risky low-return investments. Thus, the MFI would achieve a low default rate as well as the borrower is not able to take the investment that has the potential of high-return.

We explain by an example why moral hazard, i.e. change in investment behavior, could occur if the borrower is offered a strict microfinance repayment contract. If a client invests in a refrigerator for his kiosk, the refrigerator has the potential to increase the income in his business, as more customers would buy a cold coke instead of a warm coke sold by neighboring kiosks. Anyhow, if the client experiences a shock[12] and he has just invested in the refrigerator it could be difficult for the client to handle the shock in the short-run by

[11] In the case of lack of collateral moral hazard also has another dimension. The second dimension of moral hazard is ex-post moral hazard. This double dimension arises because the fulfillment of financial contracts has less liability. Ex-post moral hazard is present when the entrepreneur chooses to default despite the fact that the entrepreneur actually has the money to repay the loan, i.e. voluntary default. However, much of the rhetoric around lending to the poor, including Yunus' strategy in respect to the Grameen Bank, assumes that ex-post moral hazard is extremely rare and entrepreneurial individuals will repay as long as they can (Karlan & Morduch, 2009).

[12] An example of a shock could be that one of the clients' children gets sick and expensive medicine is needed.

selling the refrigerator because it is illiquid, i.e. not easily converted into cash. We expect it to be especially difficult to convert the refrigerator into cash in the imperfect credit market. If the borrower has a strict repayment contract the illiquid investment would become even more risky because the repayments are frequent, constraining the borrower even more in the case of a shock. If the borrower is offered a strict repayment contract the borrower would rather chose to invest into a more liquid investment like more stocks for the kiosk. Stocks, e.g. soap, candy, cigarettes etc., are more easily converted into cash, and therefore the client is more able to deal with shocks in the short-run. However, we assume that investing into more stocks relatively generates less income than investing into a refrigerator, which has the potential to indirectly increase the sale of sodas.

This type of asymmetric information is leading to a change in investment behavior and risk-adverse borrowers if the borrower is provided with a strict repayment contract. This indicates that the MFIs would achieve a lower default rate when imposing a strict repayment contract. However, the investment behavior is not optimal for the borrower. The question then becomes whether the MFI tolerate a higher default-rate at the costs of a change in investment behavior by the borrower. If the lender accepts higher default rates and takes the investment behavior of the borrower into account he could design a less strict repayment contract.

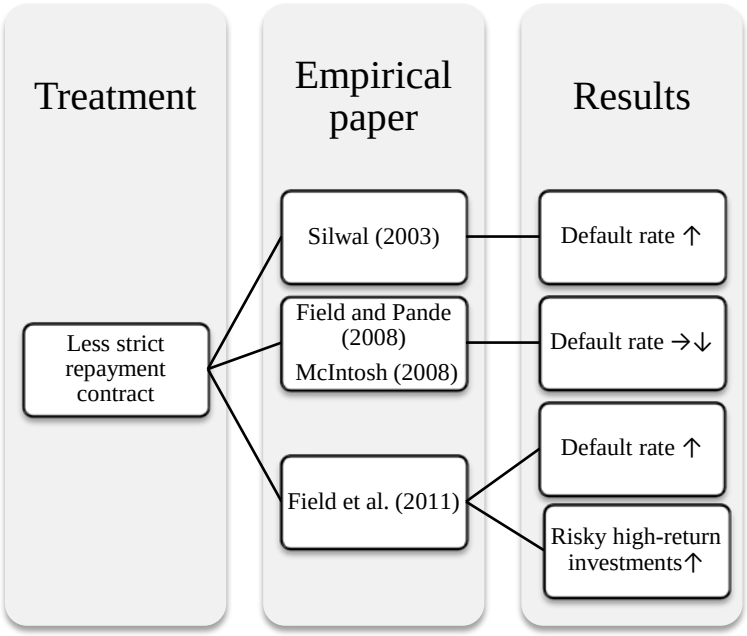
2.4.2 Recent empirical research on the default rate and investment behavior

Field et al. (2011) is, to our knowledge, the first and only paper investigating how the term structure of microfinance loans may distort investments in micro enterprises. They conduct a field experiment with poor urban borrowers in India that evaluates the short- and long-run impacts of relaxing the repayment requirements early in the loan cycle. They contrast the traditional microfinance contract which requires repayment starting immediately after loan disbursement with a contract that includes a two-month grace-period. Unlike much of the micro-credit literature, the authors assume that riskier investment yield higher returns (Field, et al., 2011). They find that the shift to a grace period in the repayment contract increased short-run business investments and long-run profits. However, they also observe a tripling of default rates.

Field et al. (2011) claim that the tripling of default rates is not due to problems of present bias[13], but more to the increased degree of risk the clients were able to take on when they were on a grace period. These findings suggest an economic environment in which entrepreneurs have access to high return illiquid investment opportunities but face borrowing constraints. Microfinance contracts that require early start of repayment reduce risk to lenders but also the potential impact of microfinance on enterprise growth and household poverty.

2.5 Summary of the motivation and literature review

Figure 2.1: A summary of recent empirical evidence



Note: This model is summarizing recent empirical evidence on how a less strict repayment contract affects the default rate and investment behavior of the borrower.

Classic microfinance contracts are dealing with the additional information problem among the poor entrepreneurs by implementing strict repayment contracts. There are advantages as well as disadvantages for whether the repayment contract should be made less strict. Figure 2.5 presents a summary of the empirical evidence on how a less strict repayment contract affects the default rate and investment behavior. The results of a less strict repayment

[13] The clients that were on the grace period did not exert any immediate difference in propensity of repayment.

contract on the default rate are ambiguous. As mentioned, there is only one paper investigating the change in investment behavior when the repayment contract is made less strict. Field et al. (2011) find that the borrowers take more high-return illiquid investments when the repayment contract is made less strict. However, the default rate increase due to higher risk associated with the investments. We believe that the incentive of the borrower is as important as the incentive of the lender because profits from both the borrower and lender are contributing to the total welfare gain in microfinance (See Figure 2.2). For this thesis we only have data on the microfinance clients, consequently we are not able to do an analysis on how the lender is affected by a less strict repayment contract (the lower path of the model in Figure 2.2). Hence, we are not able to say anything about the total welfare gains in the microfinance environment due to the intervention.

Nevertheless, we are able to illuminate how the microfinance clients' short-run investment behavior and long-run business outcome is affected by a less strict repayment contract (the upper path of the model in Figure 2.2). In addition, as there is not much empirical research on this subject, we find it interesting to further investigate whether a less strict repayment contract change the investment behavior of the borrower and business outcomes in the long-run. We enlighten this question by implementing an empirical analysis.

3. Empirical Methods

In this chapter we present the main methodology used in this analysis, i.e. randomized field experiment. The chapter starts by presenting the aim of the analysis, which is to establish a *casual effect* of the randomized intervention. Further, we explain how the problem of selection bias can be solved by randomization, before we describe the analytical foundation of randomized evaluations. Further, what problems that can occur when using this methodology and how to take these problems into account are presented. Even though randomization is by several scholars seen as the gold standard for research within the field of development economics (Armendáriz & Morduch, 2010), do not all economists agree with this view and we end this chapter by presenting the main critique the methodology has received.

3.1 Casual Effect and Selection Bias

In the later analysis is our aim to make *casual* inference on the effect of the intervention on the microfinance clients' investment behavior and business outcome. In casual analysis, the notion of ceteris paribus plays an important role and means "other (relevant) factors being equal" (Wooldridge, 2009). To be able to make casual inference it is important that the analysis is ceteris paribus, that is when no other factors than the less strict repayment contract explains our results. We would like to estimate the effect of the intervention, and only this effect. It is possible to obtain the *average* impact of an intervention on a group of individuals by comparing them to a similar group of individuals who were not exposed to the intervention (Dufflo, et al., 2007).

To be able to obtain the average impact of an intervention a control group and a treatment group is needed. The intervention is carried out on the treatment group. The control group is a group of people that would have outcome similar to those who received treatment, if they had not been treated (Dufflo, et al., 2007). If the two groups would have the same outcome without the intervention, the differences in outcome when one group is treated, is the casual effect of the treatment.

However, a problem that can arise when establishing a valid control group is different types of selection bias. Selection bias is the difference in potential untreated outcome between the treatment and the control group. In a natural setting, selection biases can easily arise. If individuals select themselves into treatment, it is often a certain kind of people who select themselves. For example, if a set of microfinance clients could choose between a strict and a less strict repayment contract, it could be that the clients most willing to take risk would chose the less strict repayment contract. Then the most risk willing clients would be in the treatment group, while the more risk adverse clients would be in the control group. The treatment group would then be biased in what type of investments the clients were willing to take, and it would be difficult to estimate whether changes in investments behavior came from the initial differences between the clients, or because of the less strict repayment contract. The selection bias makes it difficult to disentangle the impact of the treatment from other factors; it is not possible to make any casual inference (Dufflo, et al., 2007). Without a reliable way to estimate the selection bias, one cannot decompose the overall differences into a treatment effect and the effect from the selection bias. One setting where selection bias does not exist is when individuals or groups of individuals are *randomly* assigned to treatment and control group (Dufflo, et al., 2007).

3.2 Analytical Foundation

Following Armendáriz and Morudch (2010), we explain the analytical foundations of randomization. If the groups are randomly assigned to treatment, $(Y^T|T)$ would be the outcome for the ones that received treatment and $(Y^C|C)$ would the outcome for the control group. Y^T is the outcome, while "$|T$" means given the person received treatment.[14] We are interested in the casual impact; $(Y^T - Y^C|T)$, the difference between the outcome under treatment and the outcome without treatment for a person in the treatment group. The term cannot be measured for an individual, but through randomization the average of $(Y^T - Y^C|T)$ can be estimated for a group.

To estimate the casual impact, it is necessary to introduce the expectations operators. $E(Y^T|T)$ is the *average* outcome for all members of the treated group and $E(Y^C|C)$ is the

[14] Whereas Y^C is the outcome of the control group, and "|C" means given that the person was in the control group.

average outcome for the control group. However, what we really want to study is $E(Y^T - Y^C|T)$, which is the average effect of the treatment. We start with subtracting and adding the unobservable $E(Y^C|T)$ from $E(Y^T|T) - E(Y^C|C)$. This gives us;

$$E(Y^T|T) - E(Y^C|C) = E(Y^T|T) - E(Y^C|T) + \{E(Y^C|T) - E(Y^C|C)\}.$$

As the expectation operator is a linear operator, the difference of the expectation is the expectation of the difference;

$$E(Y^T|T) - E(Y^C|C) = E(Y^T - Y^C|T) + \{E(Y^C|T) - E(Y^C|C)\}.$$[15]

Here, $E(Y^T - Y^C|T)$ is the treatment effect we are trying to isolate (Dufflo, et al., 2007). While the last term, $\{E(Y^C|T) - E(Y^C|C)\}$ represent the selection bias. $E(Y^C|T)$ is the average outcome for the treated clients, if they had not been treated. This is not observable, and it is therefore impossible to assess the magnitude of the selection bias. In other words, it is not possible to evaluate to what extent the selection bias explains the difference between the treatment and control group.

As mentioned above, one setting where the selection bias can be completely removed is when the clients are randomly assigned to the groups. In a randomized evaluation, a sample of N individuals is selected from the population of interest. The sample is divided randomly into the treatment group (N_T individuals) and the control group (N_C individuals). When the treatment is assigned randomly, the individuals assigned to the two groups differ in expectation only through the treatment (Dufflo, et al., 2007). Had they not received treatment, the average outcomes would have been the same. This implies that the selection bias is equal to zero. When randomized evaluation is correctly designed and implemented it provides an unbiased estimate of the impact of a program, the estimate is internally valid. In other words, when the selection bias is zero we are able to estimate;

$$E(Y^T|T) - E(Y^C|C) = E(Y^T - Y^C|T).$$

[15] "The difference of the expectation is the expectation of the difference", can be explained by an example; the average change in income for a group of people can be calculated either as the group's average income change or the group's average income last year minus the group's average income from the year before. See Armendáriz and Morudch (2010) page 295.

3.3 Problems that can occur in a field experiment

As proven above, randomization gets rid of the selection bias; however, this relies strictly on the randomization being successful (Armendáriz & Morduch, 2010). If the randomization has not been carried out successfully, we are back to the problem of not being able to state a casual effect of the intervention. Even if the initial randomization procedure is carried out correctly, there are still problems that can arise after the experiments have started, due to the characteristics of being a field experiment.

One potential problem is attrition, which is when people refuse to take part in the follow-up surveys (Armendáriz & Morduch, 2010). Random attrition will only reduce the study's statistical power. The main concern with attrition is if it is correlated with the treatment being evaluated, it might then bias the estimates (Dufflo, et al., 2007). This would be if it is a certain type of clients who do not want to take part in the follow-up, e.g. clients that did not spend their business grant wisely. In Chapter 5 we discuss the attrition in this project, and implications from this.

A second factor that can bias the final results is spill-over effects. Spill-over effects are when the control group is, in some way, treated by the treatment group (Dufflo, et al., 2007). This could for example be evident if all the clients in the control group were made worse off because the treated group were able to invest and expand their businesses after receiving a less strict repayment contract, and by that capturing market shares from the control group. This would result in the control group performing relatively poorer than they would have done in the absence of the intervention. We are not able to control for spill-over effects from the intervention in this thesis. [16]

A third problem that can occur is when individuals change their behavior because they are taking part in an experiment. This can occur in both groups. The treatment group might be grateful to the treatment and conscious of being observed, which may induce them to alter their behavior for the duration of the experiment (Dufflo, et al., 2007). On the other hand,

[16] However, Berge (2011) studies the spill-over effects in the project *"Teaching Entrepreneurship to Microfinance Clients: Financial and Human Capital for Development"*, but with the emphasis of the clients who received business training. The author finds some spill-over effects in terms of business practice, but there is no effect on the business outcome.

the control group might feel offended to be a comparison group and react by altering their behavior. However, we are not able to control for this.

3.4 Critique to the method

Even if the problems with randomization are addressed properly, the methodology is criticized for its limitations. It is important that these limitations are taken into account. One of the limitations with randomization is that the method is only informative about the mean of the treatment effects, but do not identify other features of the distribution (Deaton, 2010). By using the standard framework, information about the median treatment effect or the fraction of the population for which the treatment is positive is not obtained. So, the field experiment might reveal an average positive effect, although nearly the entire population is negatively affected. However, it is possible to build in stratification from the start so that impact estimates can be done for different subgroups (Armendáriz & Morduch, 2010).

Another point is that randomization evaluations are often lacking external validity. The implementations are often carried out in a specific context and the experiments often have a narrow and local focus. This makes it difficult to ensure generalization or external validity (Deaton, 2010). Nevertheless, this can be addressed by replicating the experiment in other settings before drawing a general conclusion.

A last implication with randomized experiments is the ethical side. The randomness requires that a portion of the population is denied treatment, and the choice of who receives the treatment is not based on fairness (Armendáriz & Morduch, 2010). It is therefore important to be tactful when implementing the experiment and explain for the control group the importance of their participation.

4. The context: Microfinance in Tanzania

This chapter highlights the relevant characteristics of the Tanzanian society, history and economy. Of particular interest are the development of the financial market and the access of the poor entrepreneur to credit in the country. The chapter continues with a review of the microfinance institution PRIDE Tanzania. The micro entrepreneurs in our sample were clients in this microfinance institution. Last, a presentation of the poor entrepreneurs and their businesses is provided.

4.1 Tanzania – a brief presentation

Tanzania is a country in the Sub-Saharan Africa region[17]. Sub-Saharan Africa is the region in the world with highest number of people living in extreme poverty. Anyhow, according to a development report from United Nations Development Program (UNDP) the poverty rate in the region has dropped rapidly from 57 percent in 1990 to 46 percent in 2008. The World Bank and IMF estimate that the poverty rate of Sub-Saharan Africa is expected to be 38 percent by 2015 (UNDP, 2012). Tanzania is located on the East-Coast of Africa, bordering the Indian Ocean. According to the World Bank, Tanzania has progressed considerably in the past 20 years to achieve and maintain macro-economic stability, emerging as one of the best performers in Sub-Saharan Africa[18]. However, Tanzania is one of the poorest countries in the world regarding GDP per capita. It was ranked as number 198 in terms of poverty by Central Intelligence Agency (CIA) World Factbook in 2011. The poverty rate of Tanzania was 35 percent in 2011 (The World Bank, 2011).

Human Development Index (HDI)[19] is often used to measure a country's relative welfare. Tanzania is in the category of low human development and ranked as number 152 out of 187 countries, regarding the level of HDI. The development of HDI in Tanzania is presented in Figure 4.1. Tanzania has long been under the average Sub-Saharan Africa level of HDI.

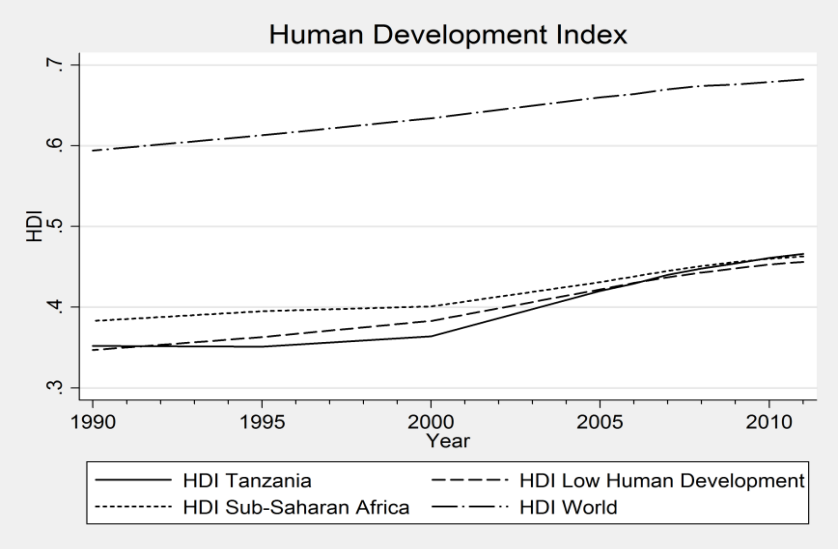
[17] Sub-Saharan Africa as a geographical term refers to the continent of Africa that lies south of the desert Sahara.

[18] According to the World Bank the Tanzanian GDP per capita (GNI per capita) was $540 in 2010 compared to $1 188 in Sub-Saharan Africa, however, the Tanzanian life expectancy in 2010 was 57 years compared to 54 years in Sub-Saharan Africa (The World Bank Data, 2010).

[19] GDP per capita, life expectancy at birth and educational attainment is included in this index. The countries are divided into four different levels of HDI; very high human development, high human development, medium human development and low human development.

However, from 2000 Tanzania has caught up with the Sub-Saharan Africa average and is now at the average level of the region (UNDP Report, 2011).

Figure 4.1: Human Development Index



Note: The figure presents the Human Development Index in Tanzania, the average HDI for countries with low human development, the average HDI for Sub-Saharan Africa and the average HDI for the world as a whole (United Nations Development Program, 2011).

Tanzania became a union in 1964 after the two former British colonies; Tanganyika and Zanzibar became the Republic of Tanzania. Until 1986 the politics of Tanzanian government was dominated by social policies and nationalism. However, the government started to liberalize the economy after 1986, thus the economy did not really start to liberalize before the Tanzanian government took some aggressive steps toward macroeconomic stabilization and structural reforms in the 1990s.

According to the CIA World Factbook (2012), the population of Tanzania is over 43.5 million people today, being the country in the world with the 30th largest population. The major city of Tanzania is Dar es Salam, with a population of 3.2 million (2009). According to the U.S. Department of State official website (2011), Tanzania is a mixed society where 63 percent of the Tanzanians are Christians, 35 percent are Muslims and 2 percent are of other believes. At the island Zanzibar on the other hand, the society is dominated by Muslims. Most Tanzanians live on the cost-line and 80 percent of Tanzanians live in rural communities. The official language of Tanzania is Swahili, but English is well spoken by the more educated Tanzanians.

Even though Tanzania is considered a poor country, the GDP growth rate has been over 6 percent during the last ten years (U.S. Department of State, 2011). This indicates an impressive growth of the economy. Due to high gold prices and increased production, Tanzania managed to keep a respectable growth level of 6 percent during the years from 2009 to 2011, despite the financial crisis. Agriculture constitutes the most important sector of the economy as it employing around 80 percent of the work force (U.S. Department of State, 2011). At the same time, agriculture only accounts for 27.8 percent of GDP. The two other main sectors in Tanzania are industry and services which respectively accounts for 24.2 percent and 48 percent of GDP. [20]

According to the U.S. Department of State official website (2011) Tanzania has a favorable attitude toward foreign direct investment (FDI) and the Tanzanian government is encouraging foreign investments. The level of total investments in Tanzania is 26.1 percent of GDP, and in comparison to the rest of the world this is a relatively high level. The investment level in Tanzania is ranked as number 57 in the World (CIA, World Factbook, 2012). However, Tanzania still has to overcome its legacy of socialism and reduce the level of corruption in order to attract more FDIs. Tanzania is highly dependent on foreign aid; in 2011 approximately 10 percent of GDP came from foreign aid (AllAfrica, 2011). According to CIA's World Fact Book the total exports had a value of $5.66 billion and the total imports had a value of $8.65 billion in 2011. In comparison to the rest of the World, Tanzania is ranked around 100 in terms of the value of exports and imports. The main trading partners of Tanzania are respectively China and India.

4.2 Development challenges in Tanzania

Infrastructure can be a binding constraint to growth and private sector development. The private sector ranks poor infrastructure, especially insufficient power supply, as a main constraint to growth in Tanzania (The World Bank, Contry Brief : Tanzania, 2012). E.g. the electricity can be gone for several hours a day and the Tanzanians have to replace the lack of electricity with expensive generators using gasoline to keep their business going. The power

[20] The agricultural products are dominated by coffee, tea, tobacco, fruits, etc. Within industry the main production is agricultural processing of sugar, beer, etc. and mining of diamonds, gold and iron (CIA, World Factbook, 2012). The key segments within service are telecommunication, banking, transportation and tourism (Jensen, et al., 2008).

cuts are unpredictable and expensive, especially for those who generate income through using electricity in their businesses, e.g. when there are power-cuts, a business printing documents have the choice between no production and producing with expensive electricity from the generators. There is also high transportation cost, especially on rural roads, that blocks access to the market. Tanzanian growth potential depends on well designed and investment programs for energy, transportation and water (The World Bank, Contry Brief : Tanzania, 2012).

Corruption is a major problem in Tanzania and it is one of the main factors behind the country's underdeveloped infrastructure. E.g., when we were collecting data for this thesis we experienced that there was a lot of frustration among the entrepreneurs regarding the government. For many of the entrepreneurs the costs in their business had multiplied because of the expensive use of generators, due to the frequent power-cuts. A lot of entrepreneurs also told us that they did not want to pay taxes or register their business because they did not see any of the money again if they were left in the hands of the government.

The job market in Tanzania is also an important challenge. The growth of the national economy has not been high enough to generate number of jobs required. According to Mfaume and Leonard (2004) there are approximately 600 000 to 700 000 people entering into the labor force every year, while the job creation is of 300 000. Self-employment is often the standard answer for the ones not able to get a job. Most microenterprise owners start small business because they lack adequate education and it is difficult to find formal employment (Mfaume & Leonard, 2004). Roughly half of the population of Tanzania is 15 years or younger (The World Bank, Contry Brief : Tanzania, 2012). The demand for youth employment, as well as social services such as water, education[21] and health care will increase correspondently to the fast growth of the population.

[21] Nevertheless, there has been a positive development in the level of education, which has had an impressive growth the last years. The net primary school enrollment was 59 percent in 2001 and increased with over 40 percent until 2009, when the level of net primary school enrollment was 95.4 percent. Bank support to a series of education programs, combined with removal of school fees at the primary school level, has played a critical role in raising enrollment rates.

4.3 The finance market in Tanzania

Expanding access to financial services holds the promise to help reduce poverty and spur economic development[22]. Anyhow, commercial banks have faced challenges in expanding access to poor and low-income household in developing economies.

When discussing the providers of financial instruments in Tanzania it is appropriate to divide the banking and finance sector into formal, semiformal and informal providers. Formal providers can be defined as those that are subject to specific banking regulation and supervision, e.g. commercial banks. [23] Semiformal providers are registered legal entities which are subject to general and commercial laws, but are usually not under bank regulation and supervision, e.g. microfinance institutions. Informal providers are non-registered groups such as rotating savings and credit associations (ROSCAs), as well as family and friends (Cgap, 2012).

Early in the 1990s the government decided to liberalize the financial sector of Tanzania. One of the main arguments for the liberalization was that there should be a Tanzanian capital market in order to assist in the mobilizing of Tanzanians to save and to channel them into long-term investments (Tanzania Invest, Tanzania Capital Markets Report, 2007). This would further generate growth in the country. In 1998 the Dar es Salaam Stock Exchange (DSE) started operating as the stock exchange market of Tanzania. The establishment of DSE made it possible for companies to go public, as well as it gave Tanzanians the opportunity to invest their money into private enterprises. In addition, DSE act as an exit mechanism for foreign investors entering into joint-venture with local partners. The Dar es Salaam Stock Exchange is said to be more developed compared to neighboring stock exchanges in Kenya and Uganda (Tanzania Invest, Tanzania Capital Markets Report, 2007). According to the official website of DSE (2012) there are today 17 listed companies on the stock exchange.

[22] The commitment to provide growth and fight poverty has been implemented by a series of strategies and plans. One of them are the World Bank Group's private sector arm, the International Finance Corporation (IFC), has mobilized over US$185 million in investments in Tanzania, and offers a broad range of advisor services to support the private sector. IFC's strategy in Tanzania is to focus on supporting small-scale enterprises through financial intermediaries, developing infrastructure by providing long-term finance for large projects, and investing in agribusiness, tourism and other key economic sectors.

[23] Formal providers may also be any registered legal organizations offering any kind of financial services.

The formal banking sector in Tanzania has been booming the last years as a result of the liberalization of the financial sector. With a total of 27 banks and a few non-banking financial institutions, which are not allowed to open current accounts, the market is characterized by a few big players and several small banks. [24] Despite the recent improvement in the bank sector, it remains small compared to the growing economy of Tanzania (Tanzania Invest, Tanzania Banking and Finance Sector Report, 2008).

Even though the formal banking and finance sector of Tanzania is developing, 54 percent of the Tanzanians are financially excluded from both formal and informal lending (FinScope, 2005). Only 11 percent of the Tanzanians have a bank account, while only 9 percent use authorized formal services. These rates are extremely low compared to developed countries. In developed countries we expect almost everyone to have a bank account as well as usage of formal services. As discussed in Chapter 2 the information problem is one of the main reasons as to why the poor are excluded from the formal sector. The fact that 54 percent of the Tanzanians are totally excluded from any financial services is a considerable concern.

Microfinance institutions, on the other hand, have found a way to deal with the information problems through the special lending contracts discussed in Chapter 2. MFIs, both nongovernmental organizations (NGOs) and governmental owned[25] MFIs are semiformal banks providing financial instruments to clients who are poorer and more vulnerable than traditional formal bank clients. During the 1970s and 1980s, the micro enterprise movement led to the growth of NGOs with the intention to provide small loans for the poor[26], this was the predecessor to the MFIs (Cgap, 2012). Specialized MFIs have proven that the poor are "bankable". Today, formal institutions are rapidly absorbing lessons learned about how to do small-transaction banking. MFIs can therefore contribute to the formal institutions increasing

[24] The different banks of Tanzania are categorized into local private banks, regional banks, international banks and multinational banks. The local private banks have clients from small to medium size business and retail banking. Regional banks also have small to medium and retail banking business clients, but on a larger national scale. International banks are positioned to mediate the business flows from their respective countries. Finally, the multinational banks are mainly dedicated to medium and large corporation banking and to donor intermediation business (Tanzania Invest, Tanzania Banking and Finance Sector Report, 2008).

[25] The government tries to reach out to the ones that are excluded by the banking sector by engaging the Dar es Salaam Community Bank. The positive trend in lending to SME is producing greater confidence in their growth potential among financial institutions and more generally in the economy as well, which is generating a positive spiral. The government is also introducing new laws that are expected to enhance lending activities (Tanzania Invest, Tanzania Banking and Finance Sector Report, 2008).

[26] In the 1990s, a number of these institutions transformed themselves into formal financial institutions in order to access more clients (Cgap, 2012).

financial access, which contributes to the growth potential for the microfinance entrepreneurs.

Microfinance institutions can be government-owned or member-owned, as well as the owners can be social-minded shareholders or profit maximizing shareholders. The discussion of whether the MFI should focus on profit or to a larger extent serve the poorest of the poor is a much debated question, see for example Ashta & Hudon (2009).

The recent year's microfinance has done a lot to provide the poor in Tanzania with access to capital. Microfinance in Tanzania began with NGOs and SACCOs (Savings and Credit Cooperative Organizations) in 1995 and has continued to grow with the increased success of microfinance internationally. In 2010 there were 227 744 active microfinance borrowers in Tanzania with an aggregated loan volume of US$ 65.2 million (MIX, 2010). Today there are a total of 14 microfinance institutions in Tanzania, where PRIDE is one of the key players.[27]

4.4 PRIDE

The project "*Teaching Entrepreneurship to Microfinance Clients: Financial and Human Capital for Development*" by Berge, Bjorvatn and Tungodden was carried out through a collaboration with the Tanzanian microfinance institution Promotion of Rural and Development Enterprises Limited (PRIDE). PRIDE is one of the largest microfinance institutions in Tanzania, having over a hundred thousand active borrowers in 2011 and an aggregated loan volume of approximately $ 37 million (MIX, 2010). PRIDE is offering lending products based on the modified Grameen model, the traditional MFI lending contract.

PRIDE started as a pilot project[28] with funding from NORAD through a bilateral agreement between the Government of Tanzania and the Norwegian Government (PRIDE, 2005). The institution target Tanzanians that are poor, economically active and running a business. The largest shares of the loans are group loans, although individual loans are also offered. PRIDE

[27] PRIDE is holding a total market share of 16 percent (PRIDE, 2005).
[28] PRIDE started with branches in Arusha, Tanga and Dar es Salam. After the pilot project the institution increased its network and has now branches all over Tanzania.

provides a loan menu with amounts ranging from $ 42 to $ 41 795. [29] The clients have to graduate from lower to higher loan amounts.

When the entrepreneurs start as clients in PRIDE, they start by borrowing small loans with strict lending terms, however, the value of the loan as well as the terms of the contract change as the clients repay the loan and behave favorably for the institution. The loan system at PRIDE motivates and, after some time, gives the lender possibilities to get more favorable loans climbing the so-called loan-ladder system. The loan-ladder thereby works as a dynamic incentive[30]. PRIDE offers four different lending products to its microfinance clients, MEC loan, Fahari loan, Ajira Loan Product and Wholesale Loan (PRIDE, 2005). [31] The two last lending products are not relevant for the clients in our sample, in 2008 all clients were MEC clients and none of them have ever gotten an Ajira or Wholesale loan.

Market Enterprise Group (MEC) loan is a lending product based on the traditional lending contract explained in Chapter 2. The MEC loan cycles ranges from $ 84 to $ 836. The MEC loan has a typical strict repayment contract, requiring weekly repayments and the repayments have to start a week after loan disbursement. To get a MEC loan the candidate have to join an enterprise group (EG) with four other clients that guarantee for each other. The five members in the EG are accountable for each other's loans. This means that if one of the clients in the EG cannot repay at the weekly meetings the other four have to pay for the client so that they do not default the contract. As a part of the lending contract the clients have to save weekly as an insurance scheme. The savings are refundable if the client wants to exit. The EG is a part of a larger group, a market enterprise group (MEC). The MEC group consists of 10 enterprise groups, accordingly 50 PRIDE clients. The MEC group is constructed to make administration easier and also to make sure the group mechanisms are maintained. The clients meet up in their enterprise group at their respectively branch to hand

[29] The currency in Tanzania is Tanzanian Shillings, TZS. All the numbers in this thesis is given in American Dollar. To convert Tanzanian Shillings to American dollar we have used the official average exchange rate for 2008 from the World Bank. The average exchange rate from Tanzanian Shillings to American Dollars was according to the World Bank TZS/$ = 0.0008359107247 in 2008. (The World Bank, 2008)

[30] See Chapter 2 for an explanation of dynamic incentive.

[31] Ajira Loan Product is a loan product that PRIDE is offering to employees in the government and other reputable organizations. The loan size ranges from $ 84 to $ 12 539 and there is no requirement for meetings at PRIDE offices. The Wholesale Lending targets registered rural based microfinance institutions, and the loans ranges from $ 8 359 to $ 41 795.

in their weekly repayments, as well as helping other clients in the group that are not able to repay the loan.

A Fahari loan is where the loan cycles range from $ 1672 to $ 12 539. A Fahari loan is an independent loan where the group dynamics are abandoned and the repayment frequency is once every month instead of once every week. This means that the Fahari loan is based on a less strict repayment contract than the regular MEC loans.

The MEC loan represents the lowest level on the loan-ladder; however, there are several levels within the MEC contract. The MEC clients can climb the loan-ladder and qualify for higher loan levels when they have paid back their initial loans at PRIDE. The loan-ladder for MEC loans are divided into four different levels. The clients who have climbed the loan four levels can further qualify for a Fahari loan. The different saving requirements and loan sizes of the loan-ladder are listed in Table 4.1.

Table 4.1: Loan-ladder

Level	Maximum loan celling	Minimum savings balance
1	$ 167	$ 42
2	$ 334	$ 84
3	$ 502	$ 125
4	$ 836	$ 209
Fahari	$ 1672-12 539	

Note: The table presents an overview of the loan-ladder in PRIDE. The information on the loan-ladder is collected from PRIDE officers.

4.5 The Entrepreneurs and their Businesses

By being a part of the data collection process of this project, we were able to get an understanding of how the typical microenterprise entrepreneur in Dar es Salaam runs a business. The different businesses are often located at market places, were small scale entrepreneurs come together offering a range of different products and services. Many of the clients run their businesses from home, which enables them to combine the businesses with taking care of their family. The entrepreneur typically runs a kiosk or a restaurant from the home. The businesses are often open the entire day, and a lot of the clients do not have any employees.

Several of the businesses in the sample are very season dependent, e.g. the businesses selling commodities are often highly affected by the rain season, not being able to meet the market demand during this season. [32] Another example of season depended businesses are kiosks selling soda which typically experience a decrease in demand during the rainy season. The seasonality makes the small business extra vulnerable. In addition, religion plays an important part of the daily life in Dar es Salaam and a lot of the entrepreneurs have very low sales during the Muslim fast, Ramadan. On the other hand, a lot of the clients reports of high sales during the Muslim celebration of Id and the Christian celebration of Christmas.

The businesses in this dataset have been divided into four sectors; commerce, service, manufacturing and agriculture. See Table 6.1 for their relative sizes. Commerce consists of businesses selling everything from groceries and clothes to charcoal. The most common business within commerce is kiosks. The typical kiosk is placed in a little shed with a window, where people passing by can buy soda, chocolate, cigarettes, soap etc. All of the stocks are lined up in their window so people can point at what they want. A lot of the kiosks have refrigerators for their sodas, but the refrigerators were rarely turned on due to the power cuts and expensive electricity.

The service sector consists to a large extent of barbershops, hairdressing saloons and restaurants, so called “Mama Lishe”, offering traditional Tanzanian food. A typical restaurant is often made up of a little shed where the entrepreneur prepare food on an open fire and keep all the raw-materials. A few plastic chairs and possibly some tables are often placed outside the shed. The menu often contained fish, chicken and pommes frites.

The manufacturing sector consists mainly of tailors sewing clothes for commercial sale and also for individual orders. The typical tailor is placed in a busy street, where people are dropping by to order clothes. The main products are often traditional clothing for females, like “vitenge”. The tailors who are doing well often have a few employees, and some of the tailors even earned money by teaching others how to do tailoring. In our sample the largest share of the tailors were men.

[32] However, some of the clients found exploit this situation by saving up stocks for the low seasons. Then they are able to set the prices very high on their goods when there is low supply in the market.

The final sector is agriculture[33], raising and trading different kinds of goods (chickens, tomatoes, beans), and selling it on the nearby markets. There are relatively few having agricultural businesses within our sample. The typical agricultural business is chicken farms. Chickens are raised on the farm and sold to the market at the time when the chickens have grown to the optimal selling size. The clients have a little house for the chickens and also a warm lamp for the small chickens.

[33] For several of the clients the agriculture business is an extra income source, having a cow in the backyard, selling milk to neighbors.

5. Experimental Design

This chapter explains the experimental design as well as important assumptions that are essential for the analysis in this thesis. In the analysis of this thesis we use data from the project "Teaching entrepreneurship to microfinance clients: Financial and human capital for development". This chapter describes the project and how we are using these data. Furthermore, the chapter describes the data collection procedure and presents the dataset we are analyzing. Last, we include some comments to the dataset.

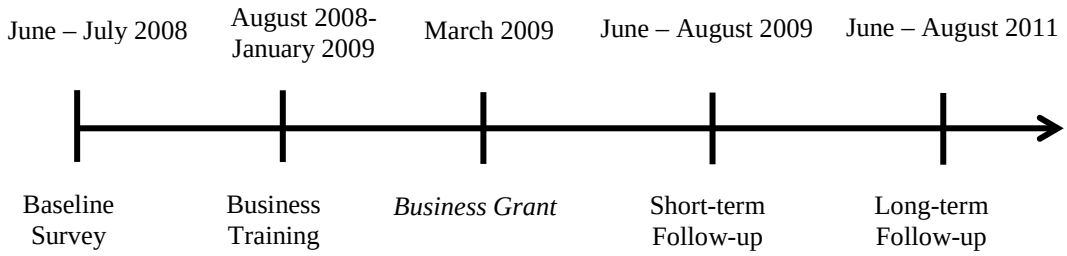
5.1 The Intervention

This thesis is a part of the research project "Teaching entrepreneurship to microfinance clients: Financial and human capital for development". Kjetil Bjorvatn, Bertil Tungodden and Lars Ivar Oppedal Berge from The Norwegian School of Economics are in charge of the project, which has been taking place in Dar es Salaam, Tanzania. The researchers are focusing on what is the most binding constraint for development in micro enterprises of human capital and financial capital. The project is a randomized field experiment, on the individual level, where a sample of microfinance clients in PRIDE was randomly assigned to treatment and control. The treatment group existed of individuals assigned for a business grant, business training or both. The control group had no treatment. A business grant of $ 84 was given to increase the clients' financial capital. The business training was given to increase the clients' human capital and was a course consisting of 21 sessions, each lasting for 45 minutes.

The project started in June - July 2008 with a baseline survey of the microfinance entrepreneurs. From August 2008 to January 2009 the business training were held. In March 2009 a subsample of trained and untrained clients were offered a business grant. This was done 6 weeks after the last training session. From June to August in 2009 there was the short-term follow-up, while the long-term follow-up was conducted from June to August 2011. [34] Figure 5.1 presents the timeline of the project.

[34] For a more detailed description, see Berge et al. (2010).

Figure 5.1: The Project's Timeline



Note: The figure presents the time schedule of the project "Teaching entrepreneurship to microfinance clients: Financial and human capital for development".

In the paper "Human and financial capital for microfinance development: Evidence from a field and lab experiment" (2011), Bergen, Bjorvatn and Tungodden presents the short-term findings of the intervention are presented. The researchers find no effect of the business grant on business outcome in the short-run. However, business training had a strong effect on male entrepreneurs. The effect on female entrepreneurs on the other hand was more muted. In this thesis the focus will be on the effect of the business grant. However, for more information on the short-term effect of the intervention (especially the business training) see Berge, Bjorvatn and Tungodden (2011).

In this thesis we use data from the project to shed light on the consequences for the microfinance clients on changing the repayment contract of the loan. The effect of providing microfinance clients with a business grant can have similarities with the effect of providing them with a less strict repayment contract. The business grant can be seen as a "loan" with a more favorable repayment contract than the PRIDE contract the clients were on prior to the treatment in 2009. The business grant has no repayments and it has an indefinite grace period. Consequently, we enlighten the effect of a less strict repayment contract through the effect of the business grant and examine the short- and long-run effects of the business grant on investment behavior and business outcome. In this randomized intervention the treatment group consists of PRIDE clients who received a business grant and the control group consists of PRIDE clients who did not receive a business grant. Given that the randomization of the clients in the treatment and control group was successful, we identify the casual effect

of providing a PRIDE client with a business grant, which give implications on the effect of making the repayment contract less strict. [35]

5.2 The Sample

5.2.1 The Original Sample

The sample in the project was chosen from two out of five PRIDE branches operating in Dar es Salaam in 2008, Magomeni and Buguruni. To carry out the randomization procedure, the researchers took advantage of the fact that the loan groups are initially randomly assigned to meeting days and hours at the branches.[36] 644 clients were interviewed and became a part of the sample and 252 of these clients were offered a business grant, leaving 392 in the control group.[37]

The entrepreneurs who were randomly assigned to the business grant were offered a grant of $84. Out of the 252 clients that were offered the grant, 247 went to collect it.[38] The clients who received the business grant were told to use the grant on business purposes. A form was given to the receivers of the business grant, and the spending of the business grant was meant to be written down on this form. The form was re-collected in 2009.

Only clients with loan size between $ 418 and $ 834[39] were asked to participate in the experiment. The reason for not including clients with a lower loan level than $ 418 was the relatively large turnover in this segment (Berge, et al., 2010). Furthermore, only clients who were on the MEC contract were included in the project. Clients with loans above $ 834 are on different contracts than the MEC.[40] Accordingly, the clients were initially relatively homogeneous on loan size and loan type. However, in the follow-ups the clients are more

[35] Some of the clients in both the control and treatment group also received business training. We are not focusing on this intervention; however the clients who received the business training make up a large share of the sample, and we therefore keep them in our sample. Nevertheless, we control for the effect of the business training throughout the analysis.
[36] For more details on the randomization procedure see Berge, Bjorvatn and Tungodden (2010).
[37] Of the 252 clients who were offered a business grant, 126 were also offered business training. In addition, 193 of the clients were offered business training and no business grant. 199 of the clients did not receive anything.
[38] The 5 persons who did not collect the business grant, was not interviewed in the follow-up surveys, and they are therefore not a part of our sample. This means that they are not causing any problems in terms of intention to treat vs. actually treated.
[39] In Tanzanian Shillings, this corresponds to a loan size between TZS 500 000 and TZS 1 000 000.
[40] The different loan contracts in PRIDE are described in Chapter 4.

spread in terms of loan range; some clients are below the loan size of $ 418, while other clients are on the Fahari contract, at the same time as some clients have left PRIDE. Nevertheless, the largest share of the sample is still within the initial loan range between $ 418 and $ 834. Even though the individuals are more heterogeneous in terms of loan size and contracts, this development is as expected and it has occurred for both the treatment and control group.

5.2.2 The Sample Collection Procedure

The data used in this project were gathered through three surveys. A baseline survey was carried out in 2008, as well as a short-term follow-up in 2009 and a long-term follow-up in 2011. The surveys were quantitative interviews with the clients. We were a part of this survey process in 2011, collecting data for the long-term follow-up. A local research assistant carried out the interview in Swahili, while research assistants from The Norwegian School of Economics registered the answers in English. The clients were mainly interviewed in their businesses. [41] This was done so that the ones carrying out the interview were able to get a proper impression of the businesses and how microfinance clients were running it.

The interviews were carried out in the same manner in the baseline and the two follow-ups. However, due to experience on the clients' response on the questions, some of the questions in the survey were replaced. The surveys of the treatment and control group were the same, except for direct questions to the treatment. The questions asked in the survey were on the clients' businesses, household and financial position. The information on their financial position is not only on their position in PRIDE, but also in other formal and informal institutions. Finally, questions about the clients' subjective opinions on their living standard, happiness, gender differences, etc., were asked in the survey.

The entrepreneurs often had several businesses and the information from each business was registered separately in the survey. In our data, for a business to be registered as the client's business the client needs to be the main decision maker. For a business to be registered as an independent business it needed to have a different activity or location than the other business. For example, if a client is operating two hair dressing saloons at different locations,

[41] Some of the interviews were carried out other places like in their homes or at the PRIDE branch. This was done of practical reasons and it enabled us to reach more of the clients.

this was registered as the client had two separate businesses. If a client was operating a hair dressing saloon and selling embroidery from the same location, this was also considered as two different businesses.

5.2.3 The Dataset

The data collected through the three surveys leaves us with a comprehensive dataset on the sample of PRIDE clients. In the analysis for this thesis, we would prefer to work with a sample including the 644 clients from the baseline. However, there has been some attrition.[42] In the short-term follow-up 530 of the clients were reached and interviewed, while 563 were interviewed in the long-term follow-up.

In the dataset we are analyzing, the individuals who have been interviewed in all three surveys are included, i.e. baseline and the two follow-ups. The reason for only focusing on the clients interviewed three times is that we are interested in how the same set of clients have developed from the baseline survey and throughout the two follow-ups. In the short-run analysis we are especially interested in the clients' investment decisions after the intervention. In the long-run analysis we are interested in examining the effect of the intervention on potential changes in investment behavior and further on long-run business outcome. Due to this, we are left with a panel dataset with 491 clients.

5.3 Balanced Dataset

5.3.1 Randomization within the dataset

Due to the theoretical mechanisms in Chapter 3, we expect the treatment and control groups to be equal on observables when using the methodology of randomization, i.e. we expect balanced treatment and control groups. Consequently, if the randomization procedure is not successful there are initial, statistical differences between the treatment and control group prior to the treatment. If there are initial differences between the groups, it can be more difficult to establish a casual effect of the treatment.

[42] Attrition is the failure data to collect outcome data from some individuals who were part of the original sample (Dufflo, et al., 2007). This is explained in the methodology, Chapter 3.

Thus, we do a randomization check to make sure that the groups are balanced and that we are studying the casual effect of the business grant. In addition, if there are any initial differences between the treatment and control group, we should control for these differences in the later analysis. The randomization check provides us with information on what covariates to include in the later analysis.

The randomization check is done by controlling for initial differences between the treatment and the control group prior to the treatment in 2009. To do this we do a regression of the treatment status, whether the client has received the business grant, on a panel of covariates from the baseline survey. The covariates involve socioeconomic characteristics and characteristics of the businesses which can affect the investment behavior and business outcome of the clients. We check whether these variables have a significant effect on the treatment status. If there are any significant variables it could indicate that the treatment has not been completely random and that subgroups may be overrepresented within the groups. This can affect the outcome of the treatment. For example, if clients with higher profits are overrepresented in the treatment group, the initial size of the profit could have been the reason for detecting positive effects of the business grant. Nevertheless, if we control for these effects, the estimates of the treatment effect are less likely to be colored by initial differences between the subgroups.

The randomization check is done for both the sample of 644 clients from the baseline and our sample of 491 clients. The randomization check of the 644 clients from the baseline sample is done to prove that the initial randomization was successful. Further, we do the same randomization check for the 491, to prove that the randomization is still successful.

Table 5.1: Verification of randomization

	Business grant, full sample	Business grant, limited sample
Profit (log) 2008	0.022	0.015
	(0.028)	(0.033)
Nr of businesses 2008	0.008	0.029
	(0.032)	(0.038)
Commerce share 2008	-0.094	-0.108
	(0.075)	(0.086)
Service share 2008	-0.031	-0.023
	(0.075)	(0.084)
Employees 2008	-0.014	-0.019*
	(0.010)	(0.011)
Work hours 2008	-0.001	-0.001
	(0.001)	(0.001)
PRIDE loan 2008	0.000	0.000
	(0.000)	(0.000)
Investments (log) 2008	-0.001	-0.000
	(0.003)	(0.004)
Education	-0.005	-0.003
	(0.009)	(0.011)
Muslim	-0.104**	-0.145***
	(0.045)	(0.052)
Male	0.029	0.081
	(0.042)	(0.051)
Married	0.042	-0.060
	(0.038)	(0.054)
Age	0.005**	0.004
	(0.002)	(0.003)
PRIDE branch	-0.292***	-0.276***
	(0.052)	(0.057)
Training	0.013	-0.010
	(0.051)	(0.056)
Constant	0.227	0.460
	(0.358)	(0.416)
Observations	644	491

*Note: The table reports regressions of treatment status on variables from the baseline survey in 2008. The dependent variable is an indicator variable taking the value one if the client has received treatment. Profit: Monthly, self-reported profit (log) in the businesses of the entrepreneurs. Number of businesses: the clients number of businesses. Commerce and Service: Share of clients involved in each of these sectors. Employees: Number of employees in the client's business. Work hours: The clients average weekly working hours. PRIDE loan: Initial size of the PRIDE loan (log) in 2008. Investments: Investments (log) in the client's business the last 12 months, including stocks. Education: The clients' number of years of schooling. Muslim: Indicator variable taking the value one if the client is Muslim. Male: Indicator variable taking the value one if the client is male. Married: Indicator variable taking the value one if the client is married. Age: The client's age, in number of years. PRIDE branch: Indicator variable taking the value one if the client belong to the branch Buguruni and zero if the client belong to the branch Magomeni. Training: Indicator variable taking the value one if the client received business training. Cluster-robust standard errors are in parentheses; *p<0.10, **p<0.05, ***p<0.001.*

Table 5.1 shows the results from the OLS-regressions controlling that the randomization of the two samples was successful. For the original sample of 644 clients, the variables that are significant are Muslim, branch and age. This means that the ones offered the business grant are on average less likely to be a Muslim and belong to the branch Magomeni. Further, the significant age variable means that the ones who received the grant are more likely to be older than the control group.

In our sample of 491 clients, Muslim and branch are still significant. In addition, number of employees in 2008 is statistically significant. As mentioned above, the clients in the sample are on average less likely to be a Muslim and belong to the branch Magomeni. In addition, clients randomly assigned to the business grant are on average likely to have fewer employees in their businesses. This indicates that the treatment and control groups are quite balanced, hoverer we need to include these initial differences as covariates in our later analysis.

5.3.2 Covariates

Even though the randomization check above indicates a relatively balanced dataset, the significant variables indicate initial differences between the treatment and control group. To be sure that these differences do not affect the estimates from the treatment effect, we include Muslim, branch and number of working hours as covariates in all regression analysis. The covariates do not affect the estimator (β). Nevertheless, it can reduce the estimator's variance (Dufflo, et al., 2007).

In addition, if we have access to the baseline value of the dependent variable we are running the regression on we include this as a covariate. Baseline values of age, education and marital status are also included as covariates, in line with other randomization experiments in this field.

5.3.3 Attrition

While it seems like both the initial sample of 644 clients and the sample after attrition was balanced, we cannot be sure that the attrition that has occurred is balanced. As explained in the methodology, attrition can be a problem through smaller sample size and selection bias, i.e. a certain kind of individuals who do not want to participate in the further study.

It is difficult to deal with attrition after the experiment has been carried out, and the best way to deal with attrition is to make sure the clients can be reached after the initial baseline survey (Dufflo, et al., 2007). In all three surveys, clients were asked to give two different phone numbers so that it would be easier to track them down later. In addition, thoroughly descriptions of where the client's businesses were located were registered by the interviewers. Even though we were able to track down most of the clients, not all of them were interested in participating in the follow-ups.[43] Consequently, there has been some attrition. However, we are not investigating this further.

5.4 Comments to the dataset

5.4.1 The Investments

As mentioned in the introduction we expect that there exist risky high-return investment opportunities due to the strict repayment contracts in microfinance. Relative to business investments, household investments are, safe but low return investments. Consequently we anticipate that the risky investments that yield higher returns most likely are business investments and not household investments. Hence, we divide investments into two different types, i.e. business investments and household investments.[44] Furthermore, we divide business investments into short-term business investments and long-term business investments. Many of the entrepreneurs invest in stocks with the intention of further sale in short time. Purchasing of stocks is most often an expenditure done to maintain the operating level of the business and we therefore find it difficult to consider purchasing of stocks as an investment. However, it is more interesting to see whether the clients increased or decreased

[43] To keep the clients within the sample, it can be helpful to incentivize participation. In 2008 and 2009 the ones who were interviewed did not receive anything for their participation. Each interview takes on average one to two hours, and it can be difficult to motivate clients to participate in the interviews. In the follow-up in 2011 the clients who were participating in the survey received a "lunch allowance" of $ 8.36. This allowance was given to show the appreciation of the clients' willingness to share their time and information for the third time. The allowance was a motivating factor for the clients to participate in the interviews. The lunch allowance could be an explanation for more clients participating in the follow-up in 2011 than in 2009.

[44] In our data it can be difficult to distinguish business investments from household investments in practice. Many of the clients run their businesses from home and their investments are often used in both the business and in the household. For example, a tailor who invests in a chair can use the same chair both when sewing and while eating dinner. The chair can be looked on as a business investment and a household investment. We define a business investment as an investment done to expand or maintain the business. If an investment is used in the business and the household, the investment is categorized as a business investment. This also means that an investment only used in the household is considered a household investment.

their levels of stocks in 2009 relatively to 2008. If the clients' increased their level of stocks, we consider it as an investment with the intention to expand the business. Due to the high trading rate of the stocks, we define an increase in stocks as short-term business investments. We define long-term business investments as procurements to expand or maintain the business (excluding stocks), like furniture and business equipment, renovation of the business, new premises and purchase of new livestock.

Due to our division between long-term business investments and short-term business investments, we expect the business investments to differ in terms of risk and ability to deal with shocks. Short-term business investments are more likely than long-term business investment to be resold within a short time period. Hence, we assume short-term business investments to be more liquid than long-term business investments. Long-term business investments are more illiquid business investments as they may never be resold, but are taken with the intention to indirectly increase the sales. This means that in terms of short-run ability to deal with shocks, short-term business investments are safer because they can be sold relatively fast, e.g. if a client invests in a box of sodas and needs to respond to a shock immediately, the client can relatively easy sell the sodas, at least to the purchasing price. Long-term business investments are more risky as they may not have the possibility to be resold, or it may take more time, e.g. if a client invest in a meat grinder it will be more difficult to deal with the shock by selling the machine, as we can imagine it to be more difficult to resell, especially in the constrained market the client is operating in. Thus, we define long-term business investments as more risky high-return investments than short-term business investments.[45]

5.4.2 Self-reported data

The data we use in this thesis is to a great extent self-reported data. Self-reported data is often the only data accessible when studying the enterprises of the self-employed poor (de Mel, et al., 2009). Nonetheless, there are some concerns due the data being self-reported.

[45] However, due to the constrained environment the poor clients are operating in, the perception of whether or not an investment is an investment can differ from the typical Western perception. For example, for the poor entrepreneur, purchasing stocks might involve a considerable amount of money and it might be considered as investments for generating future income, even if it is not considered as investments in the Western world. Nevertheless, in this thesis we define investments as procurements done to expand or maintain the business.

First of all, some of the data the clients report is not possible to verify, e.g. data on expenses and income. Even though almost 70 percent of the clients were keeping records in 2011, the quality of these is often inadequate. In addition, the clients are rarely keeping receipts from their businesses purchases. Consequently, when for example asking about the clients' profits, we cannot be certain that the clients are telling the truth. In addition, when the data is self-reported they can be subject to mental accounting. Mental accounting is how the individuals frame different evaluations (Thaler, 2004). The client's mental framing of an outcome in the business can affect how the client reports the business outcome. However, to be able to carry out interventions like this, we have to trust the clients on the data they are reporting. There are limited alternatives to self-reported data in this setting.

Nevertheless, it is important to establish a way to capture as accurate data as possible on the clients' businesses. De Mel et al. (2009) address the problems with self-reported data in developing countries and especially on the reporting of correct profit numbers. They find that asking the enterprise owners directly about their profits give a more accurate numbers than detailed questions on revenue and expenses. In the further analysis we therefore focus on the self-reported profit, following de Mel et al. (2009).

In addition we focus on how many businesses the clients have and what sectors they are operating within. Number of businesses and sector is probably not subject to changes in the clients' mental accounting and in general, there is less noise in these variables. The sectors the clients are operating the business in give additional information on what type of investments the clients are taking.

6. The Analysis

In this chapter we present our analysis on the effect of providing a randomized sample of PRIDE clients with a business grant. The business grant can shed light on the effect of providing microfinance clients with a less strict repayment contract. The chapter starts by a descriptive overview, presenting the sample studied in this thesis. This is followed by an analysis of whether the intervention has led to a change in investment behavior by the client in the short-run. Further, we analyze if the intervention have had any effect on the business outcome of the clients in the long-run. Last, we present a case study, illustrating one of the PRIDE client's concerns regarding the strict repayment contracts. In the summary we presents how these results can illuminate the effect of a less strict repayment contract on the short-run investment behavior and long-run business outcome of the entrepreneur.

6.1 Descriptive Analysis

In this section we give a brief presentation of the clients in our sample[46]. The characteristics of the average client are summarized in Table 6.1.[47] We describe the client's basic characteristics, financial position, investments and business outcome.

[46] By our sample we mean the 491 clients interviewed three times. However, we have baseline characteristics of the initial 644 clients. The average baseline characteristics are approximately the same for the two samples, however, a table of the original samples' baseline characteristics are presented in the Appendix, see Table A.1.
[47] All the numbers presented in this analysis are inflation adjusted to 2008 numbers.

Table 6.1: Descriptive Statistics

		Means (Standard Deviations)		
	Measure	*2008*	*2009*	*2011*
SOCIAL CHARACTERISTICS				
Male	Sample share	0.35 (0.48)		
Age	Years	38.08 (8.50)		
Married	Sample share	0.77 (0.42)		
Children living at home	Total number		2.29 (1.49)	1.99 (1.30)
Education	Years	7.95 (2.10)		
FINANCIAL POSITION				
Current savings	$	462.74 (434.18)	673.97 (941.41)	808.92 (1831.19)
Current loans	$	391.83 (279.26)	368.05 (374.24)	263.66 (436.69)
Net financial position	$	70.91 (496.08)	305.92 (979.11)	545.27 (1865.45)
PRIDE member	Sample share		0.90 (0.29)	0.68 (0.47)
INVESTMENTS				
Total long-term business investments[48]	$		261.12 (714.01)	413.47 (1106.92)
Total short-term business Investments	$		215.68 (605.14)	

[48] The clients' level of long-term business investments was framed differently in the baseline survey and the two follow-up surveys. Due to this we only present the numbers from the two follow ups in 2009 and 2011.

Total household investments[49]	$		394.05 (1576.36)	
SECTOR				
Commerce share	Share of business	0.56 (0.44)	0.54 (0.41)	0.51 (0.43)
Service share	Share of business	0.29 (0.40)	0.30 (0.37)	0.35 (0.57)
Manufacturing share	Share of business	0.11 (0.29)	0.11 (0.27)	0.09 (0.26)
Agriculture share	Share of business	0.04 (0.18)	0.06 (0.19)	0.05 (0.18)
BUSINESS OUTCOME				
Number of businesses	Total number	1.54 (0.63)	1.75 (0.81)	1.59 (0.88)
Profit	$	451.29 (355.76)	465.19 (661.59)	474.73 (789.37)

Note: The table reports mean values on key variables from the three surveys in 2008, 2009 and 2011. Male: Indicator variable taking the value one if the client is male. Age: The client's age, in number of years. Married: Indicator variable taking the value one if the client is married. Children living at home: The client's number of children living in the household. Education: The client's education level, in years. Current savings: The client's total saving balance, in American dollars, including savings at PRIDE, other MFIs, informal groups, informal institutions, formal banks, with relatives, mobile savings and at home. Current loan: The client's total loan balance, in American dollars, including loan at PRIDE, other MFIs, informal groups, informal institutions, formal banks, with relatives, and at home. Net financial position: Current saving minus current loan, in American dollars. PRIDE member: Indicator variable taking the value one if the client is still PRIDE member. Long-term business investments: The client's business investments excluding stocks, for 2008 and 2009 this is the investments done last year, for 2011 this is the investments done the two last years. Household investments: The client's investments in the household the last year. Number of businesses: The client's total number of businesses. Profit: The client's average, monthly profit, in American dollars. Commerce, service, manufacturing and agriculture share: Share of the client's businesses involved in the sector. Standard error is in parentheses.

In our sample 65 percent of the clients are females. The reason for the high female participation is due to the fact that there are most female members in PRIDE. The clients in our sample are between 20 to 75 years old. The average client is around 40 years old. Three out of four clients are married, and have approximately two children living at home. The

[49] For household investments we only include the number from 2009. The variables on household investments were framed differently in the different surveys, and we therefore do not consider them as comparable.

education level of the clients range from no education at all, to 18 years of schooling. The average level is seven years of schooling, which is the number of years in primary school.

As explained in the previous chapter the clients in the sample are initially relatively homogenous in terms of loan size in the baseline survey. The whole sample was PRIDE members in 2008. Further, 90 percent of the sample was PRIDE members in 2009 and 68 percent was still PRIDE members in 2011. The main reason for why people leave PRIDE is that they have repaid their loan and do not want to borrow a new loan at PRIDE.

The average total loan size, which includes loans from PRIDE and other formal and informal institutions, was $ 392 in 2008. In 2011 the loan size for the average client decreased to $ 264. At the same time as there was a decrease in the average total loan size, average savings increased. Consequently, the average net financial position of the clients (savings – loan) increased during these years, from $ 71 in 2008 to $ 545 in 2011.

The questions on the business investments of the clients were framed differently in the baseline survey and the two follow-up surveys.[50] Due to this difference we only present the number of the short-term business investments from 2009 and the long-term business investment from 2009 and 2011.[51] In 2009 the average client's short-term business investments were of $ 216. The long-term business investments were of $261 in 2009, while this had increased to $413 in 2011.

For household investments we only include the value of the household investments from 2009. The variables on household investments were framed differently in the different surveys, and we therefore do not consider them as comparable. However, our main analysis focuses on household investments in 2009 and we therefore present the 2009 variable. The average investments of the clients in the household were $ 394 in 2009. We observe that the average investments of the clients for the home were larger than the average long-term investments of the clients in the business in 2009.

[50] For the short-term business investments the clients were asked in 2009 about the value of their change in stocks from 2008, while they were asked about whether their stocks had increased or decreased in 2011. The clients were not asked about their stocks in 2008. For the long-term business investment, the clients were in 2008 asked directly of what their investments had been the last year. In 2009 and 2011 this was found by asking about the usage of the loan in a detailed manner and then asking about additional investments.

[51] However, in the later regression analysis we include the investment level in 2008 as a control variable. Even though the baseline variable is not exactly found the same way as the follow-up variables, it will reduce the variance of the estimator if we include it.

Within our sample, commerce is the largest sector in terms of number of businesses. Commerce accounted for 51 percent of the business in 2011. This was a reduction from 56 percent in 2008. The second largest sector is service. The share of service businesses increased from 29 percent in 2008 to 35 percent in 2011. Manufacturing, the third largest sector accounted for 9 percent of the businesses in 2011, this was a small decrease from 11 percent in 2008. Agriculture, the smallest sector, accounted for 5 percent of the businesses in 2011. This is approximately the same as the 2008 level, of 4 percent.

The clients are often operating multiple businesses. In 2008 the maximum number of businesses a client had was four. In 2011 this had increased to five. The average client was operating 1.54 businesses in 2008, this increased to 1.75 in 2009, while the number of businesses decreased to 1.6 in 2011.

The average monthly self-reported profit of the clients increased from $ 451 to $ 475 during the survey period. However, the median[52] client's profit declined from $ 364 to $ 284 for the same time period. This reflects an increase in the income differences between the entrepreneurs from the baseline survey to the long-term follow-up.

6.2 Quantitative Analysis

In this analysis we identify whether the intervention have had an effect on the short-run investment behavior of the clients and their long-run business outcome. We use standard OLS regression where we run the outcome of interest on treatment status and a set of covariates. [53] Gender turns out to be an important dimension for several of the regression specifications and in the analysis we include a term for female and also an interaction term for female and business grant. In the analysis we estimate the following equation;

$$Y_i = \alpha + \beta_1\, Grant_i + \beta_2 Female + \beta_3(Female_i * \ Grant_i) + \beta_4 Y_{Baseline} + \beta_5 X_i + \varepsilon_i.$$

[52] The median client can provide us with more information than the average and we have therefore included the median client's profit. Statistics of the average client's position can be strongly influenced by extreme observation. The median client is the client separating the higher half of the sample from the lower half. Extreme observations will have less importance; in some cases the median can provide a better picture of the micro entrepreneur.

[53] Standard OLS is recommended when analyzing experimental data (Angrist & Pischke, 2009).

Grant is an indicator variable taking the value one if the individual has received the business grant, which we have assumed to be an approximation of the client being on a less strict contract. Female is an indicator variable taking the value one if the client is female, while the interaction term female and grant takes the value one if the client has received the business grant and is female. The term $Y_{Baseline}$ represents the baseline variable of the outcome variable, the 2008 observation of Y_i.[54] X_i represents the covariates discussed in the previous chapter.[55]

6.2.1 Short- run investment behavior

In the analysis of the investment behavior we focus on short-run changes in investment behavior, imposed by the treatment.[56] As mentioned in Chapter 5, we anticipate that the clients, broadly spoken, invest into two types of investments, i.e. business investments and household investments.[57] Further we divide business investments in two, long and short-term business investments. Long-term business investments of the clients are all business investments excluding stocks from 2008 to 2009. Short-term business investments of the clients are the increased stock level from 2008 to 2009.

In the analysis we start by studying how the business grant was spent. Further, we examine if there are any significant differences in the investment behavior by the treatment and control group. First, we look into how they invest in their business, i.e. long-term investments vs. short-term investments. Further, an analysis on the household investments is presented, to state whether the clients, due to the treatment, have changed their level of household investments. In the analysis of the investments, we look at the clients' total investments, i.e. investments from all available capital sources.

[54] For some of the outcome variables we are lacking observations of the baseline value from 2008. This means that we are not always able to include the baseline value in the regressions.
[55] The covariates are branch, religion, gender, number of workers, age, education and marital status. In addition the baseline value of the dependent variable is included. All the covariates are in 2008 values.
[56] As the intervention is limited in size and only done once, we do not expect it to have any effect on the investment behavior in the long-run. However, we have done analysis of the effect of the intervention in the long-run, as we expected there are no results. Nevertheless, the results are provided in Appendix, Table A.2-A.3.
[57] We have divided capital usage into business- and household investments and savings. However, we do not analyze the savings because it is not possible to tell what the intention of the savings is. The savings could be used on both business- and household investments.

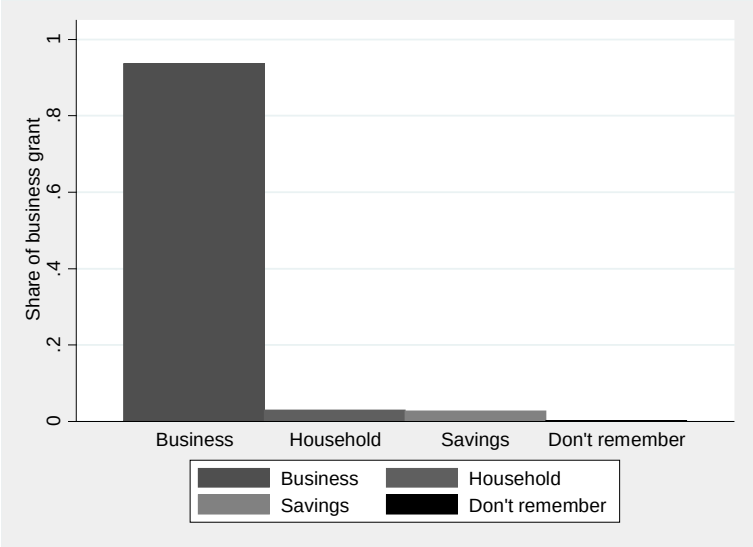
We suspect the investment variables to be relatively noisy, as the clients were asked to remember their investments one year back in time. Due to this problem, we include regressions on an indicator variable, a variable on whether the client has done any investments at all. The indicator variables are subject to less noise than the variables on the clients' investment level.

Business Grant Usage

The treatment group received the business grant in addition to their initial capital and the clients were told to use the business grant on business expenses. However, we expect that due to the constrained environment these microfinance clients live in, they will be tempted to spend the grant differently, e.g. on household investments. Consequently, it is not certain that they use the business grant on business investments. We therefore start the analysis by looking into how the business grant was spent on average. We categorize business grant expenditures into business investment[58], household investment, savings and investments they do not remember.

[58] Investments in stocks are included in business investments. Due to the data we access on the business grant investments, we have problems dividing the business investments into long-term business investments and more short-term business investments (stocks). Therefore, regarding the business grant usage, we are not dividing business investments into short- and long-term business investments.

Figure 6.1: Business Grant Usage



Note: Figure 6.1 presents the usage of the business grant. Business represents the average share of the business grant spent in the business. Household represents the average share of the business grant that is spent in the household. Savings represents the average share of the business grant that is channeled to savings. Do not remember represents the average share of the business grant usage the clients do not remember.

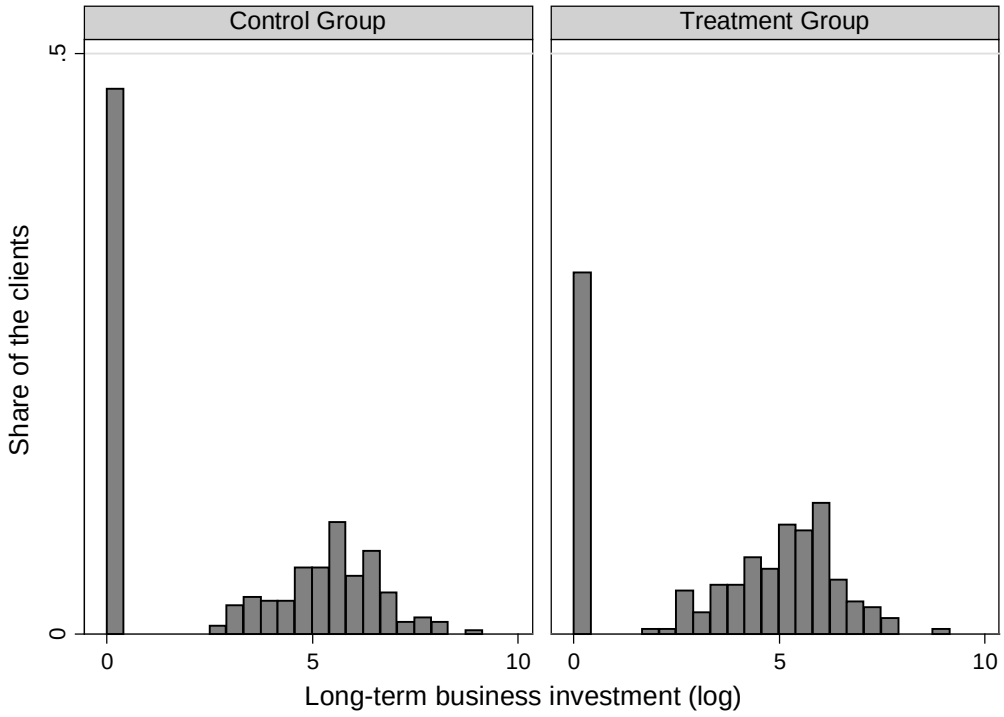
Figure 6.1 presents the distribution of the business grant usage by the average clients into business investments, household investments, savings and investments they do not remember. The clients who received a business grant invested on average 94 percent of the business grant in the business. Further, the clients invested on average 3 percent in household investments and saving. The clients used less than 1 percent on investments they do not remember. This descriptive figure shows that the clients invested almost the whole share of the business grant into their businesses.

Total business investment level

To investigate whether the clients have changed their investment behavior in response to the treatment, we look into the total business investments, where capital from all sources is included, i.e. also the business grant. We would like to observe whether the treatment group has changed their investment behavior, relative to the control group. As explained in Chapter 5, we divide total business investments into long-term business investments and short-time business investments.

Figure 6.2 presents the distribution of total long-term business investments for the control and treatment group.

Figure 6.2 Total long-term business investments



Note: The figure presents the long-term business investments (log), in American dollars. The histogram to the left presents the control group, while the histogram to the right presents the treatment group.

The distribution of total long-term business investments indicates that the treatment group on average invested more into long-term business investments compared to the control group. In addition, there are more clients in the control group not investing in long-term business investment at all, compared to the treatment group. However, to be able to state a significant change in investment behavior, we run a regression analysis.

Table 6.2: Total long-term business investments (log)

	Long-term business investments, with covariates	Long-term business investments, no covariates	Indicator long-term business investments, with covariates	Indicator long-term business investments, no covariates
Grant	0.948**	0.806*	0.276***	0.249***
	(0.426)	(0.438)	(0.077)	(0.079)
Grant*Female	-0.370	-0.206	-0.168*	-0.140
	(0.532)	(0.555)	(0.094)	(0.097)
Female	0.292	0.377	0.110*	0.119*
	(0.378)	(0.399)	(0.066)	(0.069)
Sum Female	0.578*	0.600*	0.108*	0.108*
	(0.340)	(0.338)	(0.057)	(0.057)
Observations	491	491	491	491
R^2	0.106	0.024	0.104	0.038

*Note: The table reports regressions of the long-term business investments (log) the last year, in American dollars on treatment status. The table also reports regressions of an indicator variable on long-term business investments, taking the value one if the client has made any long-term business investments the last year on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, if the client have received business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table 6.2 presents the results from the regression with total long-term business investments in log[59] as dependent variable. Males in the treatment group enter the regression with a positive coefficient, confirming that males in the treatment group increased their total long-term business investments. Males in the treatment group spent around 90 percent ($ 243[60]) more on long-term business investments compared to males in the control group. The finding is statistically significant at respectively 5 and 10 percent for both specifications[61]. The treated males on average increased their long-term business investments with $ 243,

[59] In the regression analysis where the dependent variable do not have negative values we use the natural logarithm of the dependent variable. Using the logarithm allows for a non-linear relationship between the dependent and independent variables (Wooldridge, 2009). The log narrows the range of the variables and makes the estimates less sensitive to extreme observations. For variables where some observations (y) are 0, we add 1 to all observations to avoid losing observations (y+1).

[60] We find this value from multiplying 90 percent with the average long-term business investment level of the males in the treatment group ($ 270).

[61] The specifications are with and without covariates.

which is more than the initial size of the business grant of $ 84, indicating a change in investment behavior for males.

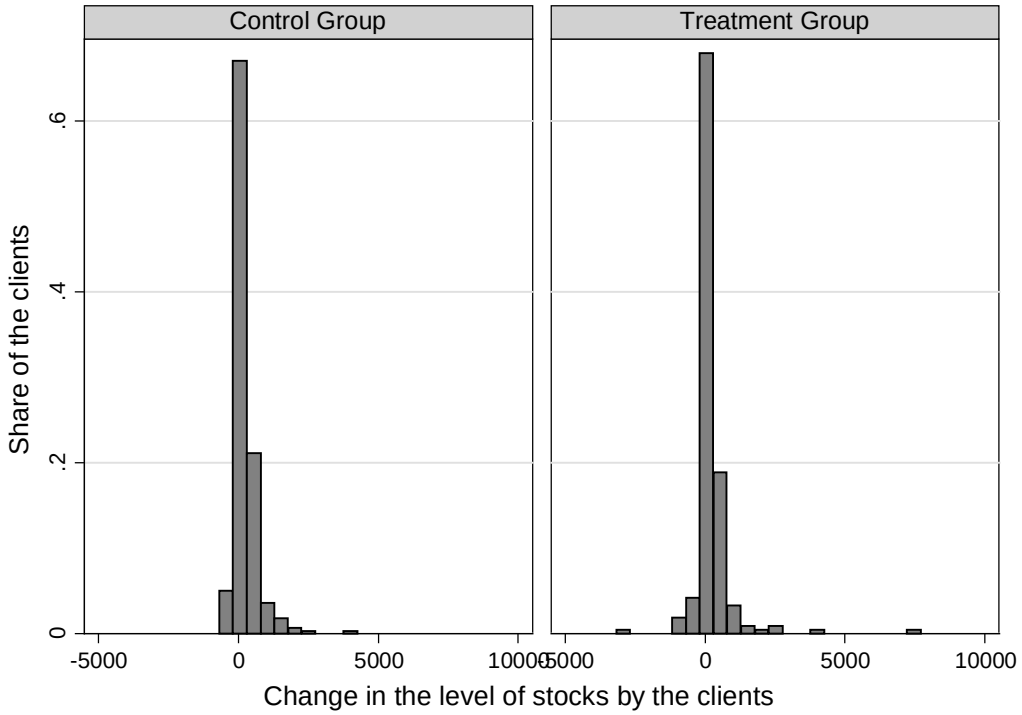
Females in the treatment group also enter the regression with a positive coefficient, confirming that females in the treatment group increased their total long-term business investments. Females in the treatment group spent on average 60 percent ($153[62]) more on long-term business investments compared to the females in the control group. The finding is statistically significant on a 10 percent level, for both specifications. Treated female increased their business investments with $ 153, which is more than the initial size of the business grant ($ 84), indicating a change in investment behavior for females as well.

Table 6.2 also presents the results from the regressions with an indicator variable on total long-term business investments as dependent variable. An indicator variable is subject to less noise, and is therefore providing us with a consistency check on the results presented above. If the client takes any long-term business investments at all, the indicator variable takes the value one, and if the client does not take any long-term business investments the indicator variable takes the value zero. Males in the treatment are around 25 percent more likely to do long-term business investments, compared to the control group. The finding is statistically significant at respectively 5 percent for both specifications. Females in the treatment group are around 10 percent more likely to do long-term business investments compared to the control group. The finding is statistically significant on a 10 percent level for both specifications. The results from the indicator variable regressions are consisted with the results on the long-term business investment level, the results are robust.

Figure 6.3 presents the distribution of total change in stocks for both the control and treatment group, i.e. change in total short-term business investments

[62] We find this value from multiplying 60 percent with the average long-term business investment level of the females in the treatment group ($ 256).

Figure 6.3 Change in total short-term business investments



Note: The figure presents the change in the clients' level of stocks. The histogram to the left presents the control group. The histogram to the right presents the treatment group.

The distribution of change in total short-term business investments indicates no difference between the treatment group and control group. The figures look similar, and this is confirmed in regression analysis in Table 6.3.

Table 6.3: Total short-term business investments (level)[63]

	Short-term business investments, with covariates	Short-term business investments, no covariates	Indicator variable, short-term business investments, without covariates	Indicator variable, short-term business investments, without covariates
Grant	-74.747	-50.881	0.005	0.008
	(99.467)	(94.389)	(0.079)	(0.082)
Grant*Female	66.786	61.800	-0.007	-0.003
	(119.207)	(117.108)	(0.095)	(0.096)
Female	-103.176	-81.530	0.068	0.072
	(68.896)	(58.199)	(0.066)	(0.067)
Sum Female	-7.96	10.918	-0.002	0.005
	(60.733)	(74.215)	(0.054)	(0.055)
Observations	491	491	491	491
R^2	0.015	0.008	0.009	0.021

*Note: The table reports regressions of the changes in the client's stocks on treatment status, the table also presents regressions on an indicator variable on the change in stock, taking the value one if the client has increased his stocks the last year and taking the value zero if it is the same or have decreased on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch and business training. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table 6.3 presents the results from the regression with short-term business investments as the dependent variable. The treatment group (both male and female) enter the regression with a negative coefficient[64], indicating that clients in the treatment group reduced their short-term business investment. For treated males the regression indicates that they spent around $ 60 less on short-term business investments compared to the control group, nevertheless, the effect is not significant. For females the coefficient is around 0, indicating no difference between the treated females and females in the control group in terms of short-term business investments, neither the effect on female is significant. Table 6.3 also presents the results from the regression with an indicator variable of total short-term business investments as dependent variable. There are no difference between the treatment and control group on the likeliness of increasing the value of the stocks in their businesses. The

[63] We would prefer to do this regression in log, which would be consistent with the rest of the analysis in this thesis. Anyhow, there are 85 negative observations in the sample, which we would lose in a log transformation. We therefore keep this analysis on level, to not lose the negative observations.
[64] For females, this is only true for the regression with covariates.

results from Table 6.3 confirm our prediction from the distribution in Figure 6.3, the short-term business investments do not change significantly in response to the treatment.

From the analysis presented above, we are not able to state any significant effect from the treatment on the short-term business investments of the clients. Even though the level regressions for males indicate a decrease in short-term business investment, the indicator variables do not support this, and we conclude that the short-run business investments are approximately the same for the treatment and control group. However, we have been studying the "business grant forms" from the clients and know that a relatively large share of the business grant is used on stocks, short-term business investments. Consequently, we expect the treatment group to increase their level of stocks relatively to the control group. As we do not find this result, it might indicate that the treatment group invested capital from the business grant into stocks, but reduce the level of investments into stocks from other capital sources than the business grant, illustrating that money can be fungible.[65]

The result on total business investments indicate that the clients has increased their long-term business investments significantly due to the intervention, as well as there is a weak indication of a reduction in their short-term business investments. As we expect long-term business investments to be more illiquid high-return investments than short-term business investments, this result indicates that a less strict repayment contract can enable the clients to make more high-return illiquid investments.

Total household investment level

We end this investment analysis by checking whether the clients change their investment behavior in terms of their investments in the household.[66]

[65] Money is fungible if a client has capital from two different sources and can increase investment from one of the sources, and respectively decreases the level of investment from the other source. The increase in short-term business investments could be explained by a reduction of short-term business investments from other capital sources, that the client has access to, than the business grant. Thus the relative total short-term business investment would not change due to money being fungible.

[66] Due to the data we have access to we are not able to separate the household investments into subcategories. The clients were asked to state their investment for the home the latest year.

Table 6.4: Household investments (log)

	Total household investments, with covariates	Total household investments, no covariates	Indicator variable household investments, with covariates	Indicator variable household investments, no covariates
Grant	-0.429	-0.276	-0.064	-0.032
	(0.441)	(0.424)	(0.074)	(0.072)
BG*female	0.376	0.239	0.092	0.070
	(0.538)	(0.530)	(0.092)	(0.090)
Female	-0.663*	-0.648*	-0.134**	-0.120**
	(0.350)	(0.350)	(0.059)	(0.060)
Sum Female	-0.053	-0.036	0.028	0.038
	(0.301)	(0.299)	(0.051)	(0.052)
Observations	491	491	491	491
R^2	0.063	0.043	0.062	0.041

*Note: The table reports regressions of the client's household investments (log) the last year in American dollars, on treatment status. The table also reports regressions on an indicator variable on whether the client has made household investments, taking the value one if the client has taken any investments in the house and taking the value zero if not on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table 6.4 presents the results from the regression with total household investments in log as dependent variable. Males in the treatment group enter the regression with a negative coefficient, indicating that men in the treatment group decreased their total household investments after the intervention. Males in the treatment group spent around 35 percent ($ 120[67]) less on household investments compared to the control group. However, the findings are not statistically significant in any specification. Females in the treatment group also enter the regression with a negative coefficient, indicating that females in the treatment group decrease their total household investments after the intervention. Females in the treatment group spent on average 5 percent ($ 21[68]) less on household investments compared to the control group. However, the findings are not statistically significant in any specifications. Table 6.4 also presents the results from the regressions with an indicator variable of total household investments as dependent variable. The coefficient for males indicates that the clients in the treatment group are slightly less likely to do any household investments at all,

[67] We find this value from multiplying 35 percent with the household investment level of the males in the treatment group ($ 342).

[68] We find this value from multiplying 5 percent with the average household investment level of the females in the sample ($ 422).

compared to the control group. The coefficient is positive for females, indicating the opposite. However, the indications are weak and none of the regressions are significant.

As stated earlier, we assume that household investments are less risky and yield lower return than business investments. There is a tendency that treated clients reduced their level of household investments, indicating that a less strict repayment contract could make the clients invest less into relatively safe low-return investments. However, the decrease is not significant.

Summary of the findings in investment behavior

In the short-run, we observe that the treatment group significantly changes their investment behavior into making more long-term business investments. In addition there is an indication of a reduction in both short-term business investments and household investments for the treatment group. Due to our expectations of long-term business investments being relatively more illiquid and yields higher return than both short-term business investments and household investments, we expect that the treatment group have become more risk-willing and have higher potential for income-growth than the control group. However, for the change in the investment behavior to have a positive effect on the growth in the entrepreneurs' businesses, we have to check whether the intervention had any effects on the long-run business outcome.

6.2.2 Long-run business outcome

In this section we focus on the long-run effect of the business grant on business outcome, due to the findings of no effect of the business grant in the short-run in Berge et al. (2011).[69] One reason for no findings in the short-run can be due to the short time span between the intervention and the short-run follow-up, being only a few months. It might be that the increase in long-term business investments by the clients did not have enough time to prosper by the short-run follow-up, but they have by the time of the long-run follow-up.

[69] Nevertheless, we have analyzed this with our sample and as expected there are no significant effects of the business grant on short-run business outcome. The results are presented in Appendix, see Table A.4-A.7.

Treatment effect on the total number of businesses

We start by looking into the total number of businesses of the clients, which can be a measurement of entrepreneurship (Field, et al., 2011).

Table 6.5: Total number of businesses[70]

	Number of businesses, with covariates	Number of businesses, no covariates
Grant	0.265**	0.272**
	(0.122)	(0.115)
Grant*Female	-0.406***	-0.417***
	(0.155)	(0.155)
Female	0.360***	0.338***
	(0.101)	(0.098)
Sum Female	-0.141	-0.145
	(0.109)	(0.106)
Observations	491	491
R^2	0.058	0.041

*Note: The table reports regressions of the client's total number of businesses in 2011 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

The results are presented in Table 6.5 with the total number of businesses as the dependent variable. Males in the treatment group have around 0.27 more businesses in 2011, than males in the control group. This result is significant at the 5 percent level, for both specifications.

The fact that males in the treatment group have more businesses can be explained in two different ways. First, men in the treatment group might have been closing down fewer businesses than men in the control group. Due to the intervention, they could have been able to increase their investments in their existing businesses, which have made them able to run their businesses in a more sustainable way than the control group and enabling them to keep their businesses running. Second, it can indicate that treated males have invested in and opened more businesses. Due to the intervention, the clients might have been able to invest in new business opportunities. To invest in a new business, is relatively risky, as the client

[70] In our sample there are 29 clients not operating any businesses anymore in 2011. In this regression these clients are included, taking the value zero. The reason for including these in a regression on business outcome is because we consider that the clients are not running a business anymore as an important outcome, in the context of number of businesses. However, the regression is also done when excluding the clients who do not have a business anymore from the regression and the result is robust.

have less knowledge on the return on the business investments in a new business. Unfortunately, we are not able to derive whether it is more start-ups or fewer closings of the businesses that is driving the result of the treatment group having more businesses.[71]

Nevertheless, we are able to state that treated male clients have been able to operate more business in the long-run, due to the intervention. This result is consistent with the findings above, of the treatment group increasing their long-term business investments. If the result is due to the opening of more businesses, it indicates that the clients have been taking more unknown business investments and the clients have relatively increased their investments to be more risky. Or, it indicates that the clients have had fewer close-downs of existing businesses compared to the control group. Regardless of what is driving the results, to operate several businesses in the long-run could make the client more diversified and able to deal with shocks. This indicates a welfare gain for the male clients in the treatment group.

For females, the coefficient for the treatment's effect on total number of businesses is negative, indicating that females have around 0.15 fewer businesses than females in the control group. However, this is not significant. At the same time, the interaction term for females and the treatment is negatively significant, which indicates a systematic difference on the effect of the treatment for females and males. Why males and females are affected differently by the intervention can have different explanations. It might indicate that females in the microfinance environment are to a greater extent constrained by other factors than the repayment contract. This result is consistent with other studies on the difference on the effect of interventions on gender in the microfinance environment; see Berge et al. (2011). [72]

Treatment effect on sector

Further, the sectors the clients are operating in can provide us with extra information in terms of where the clients are channeling their business investments. The analysis has been

[71] During the survey process we were not able to capture the complete number of new business creation and closures. The clients were not asked whether they had started and closed again any business between the short-term follow-up and the long-term follow-up.
[72] However, in this thesis we do not focus on the gender differences in the microfinance environment.

carried out for all four sectors. However, the effect of the treatment was only significant for the service sector, thus we only present the result for the service sector in Table 6.6.[73]

Table 6.6: Sectors[74]

	Share of businesses in the service sector, with covariates	Share of businesses in the service sector, no covariates
Grant	0.110**	0.091**
	(0.048)	(0.045)
Grant*female	-0.068	-0.058
	(0.062)	(0.061)
Female	0.041	0.035
	(0.044)	(0.043)
Sum Female	0.042	0.033
	(0.043)	(0 .042)
Observations	491	491
R^2	0.248	0.236

*Note: The table reports regressions of the client's share of businesses in the service sector in 2011 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. BG*female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table 6.6 presents the result of the regression of the client's share in the service sector as the dependent variable. Males in the treatment group have around 10 percent more of their businesses within service than the control group. This is significant at the 5 percent level, for both specifications. We therefore assume that the increased number of businesses for men in the treatment group is located in the service sector. For females there are no significant changes of what sector they are operating in.

It would be interesting to study the investment level in the service sector and compare it with the investment level in the other sectors. However, the clients were only asked about the overall investments for their businesses, consequently we do not have data on the investment level in each sector. Nevertheless, from the characteristics of the typical service business in our sample, the entrepreneurs in the service sector need to take on relatively large

[73] There were no significant results on the other sectors; commerce, manufacturing and agriculture. However, the results from these regressions are provided in Appendix, see Table A.8-A.9.

[74] In this analysis the ones that are not operating a business anymore takes the value zero. The alternative would be to exclude them from the analysis. The result is not affected if we exclude the ones who do not have a business anymore from the analysis.

investments in equipment to run these types of businesses, compared to commerce where investments into stocks are more important. In other words, the increased presence in the service sector fits well with the increase in long-term business investments in 2009.

Treatment effect on Profit

Finally, we check whether the treatment has resulted in the clients earning more profit in their businesses.

Table 6.7: Profit (log)[75]

	Profits, with covariates	Profits, no covariates
Grant	0.204	0.291
	(0.238)	(0.225)
Grant*Female	-0.128	-0.180
	(0.300)	(0.299)
Female	-0.135	-0.109
	(0.218)	(0.212)
Sum Female	0.075	0.111
	(0.200)	(0.194)
Observations[76]	490	490
R^2	0.052	0.038

*Note: The table reports regression of the client's monthly profit (log), in American dollars, in 2011 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. BG*female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table 6.7 presents the result with profit in log as the dependent variable. Treated males have a positive coefficient on profit for both specifications. This indicates that males in the treatment group have around 25 percent higher profit than the males in the control group. However, the coefficient is not significant, having a p-value of 0.398. Consequently, we do not have enough evidence to state a significant effect from the business grant on the clients'

[75] In the profit regressions we include the 29 clients not operating a business anymore, these are included taking the value zero. We include them as they do not have any business, which generates zero profit. On the other hand, we do not know why the clients are not operating a business anymore, one explanation could be that they have been employed and now has a stable income. This means that they are better off, and it could seem incorrect to include them with a zero observation in the regression. However, including or excluding the ones who do not have any businesses anymore does not significantly affect our results; consequently they are included in the analysis.

[76] In the profit analysis we lose one observation in the log transformation, due to one client having negative profit.

profits. The treated females also have a positive coefficient. This indicates that treated females have around 9 percent higher profit than females in the control group. Neither this is significant, having a p-value of 0.623.

There is no statistically significant effect of the intervention on profit. Nevertheless, there is a lot of noise in the profit numbers, which is common when using self-reported data in this setting. The standard deviation of the profit is relatively large, and we suspect that noise can be a part of the explanation for not being able to state a significant impact of the treatment.

As we are not able to indicate an increase the treatment groups' profit, we include a last regression, which presents the relationship between number of businesses and profit. The aim of this analysis is purely to state a positive relationship between these variables. The analysis does not focus on the treatment, leaving the business grant out of the regression. In addition, the genders are not separated – as the focus is on the general relationship between profit and number of businesses.

Table 6.8: Number of businesses and profits (log)

	Profits, with covariates	Profits, no covariates
Number of businesses 2011	0.440***	0.441***
	(0.048)	(0.048)
Observations	461	461
R^2	0.194	0.189

*Note: The table reports regression of the client's monthly profit (log), in American dollars, in 2011 on the client's number of businesses. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table 6.8 presents the results with profit in log as the dependent variable. There is a significant, positive relationship between number of businesses and profit, on a 1 percent level in both specifications. Operating one extra business gives on average a 44 percent increase in profits. From Table 6.7 we are not able to state a significant effect from the intervention on profit. However, the regression in Table 6.8 could indicate that the treated males' higher number of businesses could turn into increased profit in the future. It might be that the investments in the service sector need more time to prosper, for example due to the importance of building a good reputation. At the same time, this analysis is on the long-term follow up, two years after the intervention. This weakens the argument of higher profit in the future. In addition, from the analysis we are not able to state anything about the causal effect.

It could be that it is the clients with the greatest profit who are able to open more businesses. Due to this we are not able to state anything on higher number of business and increased profit other than that it is a link that *could* indicate increased profit for the treated males in the future.

Summary of the findings on business outcome

In the long-run we observe that the males in the treatment group are significantly running more businesses than the males in the control group, and the higher number of businesses is located in the service sector. The results on the long-run business outcome indicates a welfare gain for males in the treatment group as they are able to be more diversified through operating more businesses than males in the control group. Being more diversified could enable the clients to better deal with shocks. However, we are not able to state a significant effect of the treatment on profit.

6.3 Qualitative Analysis

In this section we present a case study from a PRIDE client in one of our self-experienced interviews from 2011. This case study is meant as an extra motivation for our hypothesis that a less strict repayment contract can change the microfinance clients' investment behavior, which in turn can affect the business outcomes of the client. We present a discussion with Mwanaisha owning and running a catering business. This microfinance client is clearly frustrated over being financial constraint by the strict repayment contract from PRIDE. She complains that the strict repayment contract from PRIDE prevents her from taking the great business opportunity she has.

The business of Mwanaisha was to provide catering for a large governmental medical center and weddings. She had a contract with the medical center to provide food for breakfast and meetings. The contract assured her a fixed profit of $ 32 every day. Her stated operating profit in this business was $ 45 in a normal business day, thus she normally earned an additional $ 13 in profits from catering to weddings.[77] She worked in the business 12 hours a day, 5 days a week. She had two employees that are females and no-family members, which

[77] The client's daily operating profit is relatively high, compared profit level of the average client in our sample which is $ 16 a day.

she paid a monthly salary of $ 45. Mwanaisha was very satisfied with her employees. Occasionally, when the demand was high she hired temporary workers. Mwanaisha received a business grant in 2009 and she invested the entire business grant into a meat grinder for her catering business.

Mwanaisha used a part of her PRIDE loan in 2011 on small business investments such as furniture and cooking equipment, and she saved the rest of the loan. Mwanaisha was saving for a great business opportunity, namely to start a pharmacy. Mwanaisha had connections at the governmental medical center that could help her to start a pharmacy. However, the strict repayment contract on her existing PRIDE loan was preventing her from making the business investment needed to start a pharmacy. She explained that she would like a less strict repayment contract because she needed time, a grace period, for the pharmacy to generate profit before she would start to repay the loan. Before the pharmacy would start to generate income, the pharmacy would need to be built and further she would have to invest into stocks. A frequent repayment contract requires her to start paying back the loan before the business has started to generate money. Another problem she complained about with the strict repayment contract is the additional transaction costs. She has to be away from the business frequently for attending the group meetings and she loses money when she is away from the business. In addition, it costs her money to travel to the branch.

Mwanaisha has tried to talk to PRIDE several times for convincing them to accept her for a larger loan with a less strict repayment contract. However they do not listen to her and are not giving her a more favorable loan. She explained that PRIDE should establish good client books or a letter of approval, so that they could get a document that showed how reliable the client had been. These documents could signal to other banks that the client had good records for repaying the loans and could be used as approval for more favorable loan terms. In addition, she was missing a tighter and better relationship with PRIDE. She would like PRIDE to be more engaged in her financial position, so that they could make a more adjusted loan for her that she felt she deserved.

As Mwanaisha had been rejected from PRIDE, in terms of getting a loan with more favorable terms, she would like to get a loan in the formal bank instead. However, she needs collateral to seize in the event of default, in order to get a loan in the formal bank. Due to

this, she had done some additional business investments. She had invested a large sum of money into building a new business premise for the pharmacy. She had started to build the premise for the pharmacy so she could prove to the formal bank that she had valuable collateral. If the formal bank approves this collateral, she would be accepted for a less strict repayment loan in the formal bank.

We believe this story illustrates how difficult it can be to invest when a great business opportunity arises, due to the strict repayment contract. Mwanaisha is willing to take more risk, but does not get a loan that matches her needs.

To sum up, Mwanaisha tells us that she will change her investment behavior if she gets access to a larger loan with a less strict repayment contract. If she gets a more favorable loan she will invest into a more risky business, the pharmacy. She assumes that the pharmacy would generate much more return than her "safe" contract based catering business.

6.4 Summary of the findings

In this analysis we have been studying the effect of providing microfinance clients with a business grant. We have assumed that the business grant can illuminate the effect of providing the clients with a less strict repayment contract.

The investment analysis illustrates a casual effect of the intervention on the investment behavior of the clients in the short-run. The treatment group significantly increased their long-term business investments as a response to the intervention. Further, there is an indication of the treatment group decreasing both their short-term business investments and household investments. Due to our expectations of long-term business investments being more risky and yield higher return than the short-term business investments and household investments, the results indicates that the clients changed their investment behavior into more risky and high-return investments in response to the treatment.

Further, the analysis on business outcome illustrates a significant effect of the intervention on the business outcome of the male's entrepreneurs in the long-run. Males in the treatment group had significantly more businesses in the long-run as a response to the intervention. The fact that the clients are operating more business in the long-run indicates that they are

more diversified, which makes them less vulnerable to shocks. This increase in number of businesses indicates a welfare gain for the clients.[78] Further, there are indications of the treatment increasing the profit in the long-run. Yet, the effect is not significant.

At last the qualitative analysis strengthen our main question in hand, that a less strict repayment contract could make the clients change their investment behavior into taking more risky high-return investments.

The short-run analysis illuminates that a less strict repayment contract could lead to a change in investment behavior for both males and females, into taking more risky high-return investments. Further, the analysis illuminates that a less strict repayment contract could increase the male clients' number of businesses, which would make them more diversified. The treatment group being able to be more diversified than the control group indicates a welfare gain of the treatment group.

[78] At the same time, we did not trace any significant effect from the treatment on business outcomes for females, even though they had a significant increase in their long-term business investments. This indicates that the average female in our sample are constrained of other factors than males, resulting in no effect of the treatment on long-term business outcome.

7. Summary and concluding remarks

This master thesis illuminates the impact of a less strict repayment contract on the short-run investment behavior and long-term business outcomes of the poor entrepreneur.

The literature presented in Chapter 2 demonstrates how the microfinance institution and the poor entrepreneur are affected by a less strict repayment contract. Recent empirical research demonstrates ambiguous results of a less strict repayment contract on the default rate. There is limited empirical evidence on the effect of a less strict repayment contract on the investment behavior of the microfinance client. However, Field et al. (2011) turns the focus on, not only the lender, but also the borrower when designing a repayment contract. They find that a less strict repayment contract change the investment behavior of the borrower into making more risky and high-return investments.

Due to the strict repayment contract in microfinance we expect there to be risky high-return investment opportunities in the market. We anticipate that when the clients are introduced to a less strict repayment contract, they would change their investment behavior and increase their risky high-return investments. These kinds of investments might generate higher income at the same time as the default rate might increase due to the risky investments. We anticipate that business investments, and more specifically long-term business investments, are risky high-return investments.

In this thesis we have studied the mechanism of a less strict repayment contract on the clients' investment behavior in the context of a randomized field experiment in Tanzania. The treatment group received a business grant, which could have similarities with providing the clients with a less strict repayment contract. Through this intervention, we illuminate the mechanism of a less strict repayment contract on the investment behavior and business outcomes of the clients.

In the short-run, we find that the treatment group invested significantly more into long-term business investments. We also find indications of the treatment group decreasing their short-term business investments and household investments. However, these reductions are not significant. Nevertheless, our result of a change in investments behavior into more long-term

business investments indicates that the clients are more risk-willing and might be able to generate higher income in the long-run.

In the long-run, we are able to trace some effect of the intervention on business outcomes. There is a significant effect on males in the treatment group increasing their total number of businesses. The increase in total number of businesses could make the males in the treatment group more diversified than the control group. Being more diversified have the potential of making the borrower better suited to handle shocks, which indicates a welfare gain for the males in the treatment group. At the same time, there are no significant results for female entrepreneurs. This indicates that females in the microfinance environment could be constrained by other factors than the strict repayment contract.

Our theoretical analysis enlightens the importance to take both the lenders' and borrowers' incentive into account when designing the repayment contract. A less strict repayment contract could be the triggering factor leading the entrepreneurs to take more high-return investments in the market. In turn, we expect the high-return investments to be more risky indicating that a less strict repayment contract could increase the default rate. Nevertheless, we are not able to test for the default rate in our analysis, and therefore not able to say anything on the impact of a less strict repayment contract on the MFI. Anyhow, we have been able to shed light on the effect of a less strict repayment contract on short-run investment behavior and long-run business outcome of the borrower. We hope that researchers in the future will be able to investigate a stronger causal effect of a less strict repayment contract on investment behavior and income-growth, and that they will be able to take both the incentive of the lender and borrower into account when investigating the effect of a less strict repayment contract.

This study does not provide definitive answers to the questions about the impact of a less strict repayment contract on the short-run investment behavior and long-run business outcomes on the poor entrepreneur. It does, however, constitute a carefully attempt to assess the impact of a less strict repayment contract on enterprise performance. This thesis represents one additional reference point in the attempt to determine how the lending contracts affect the microfinance entrepreneurship.

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APPENDIX

Table A.1: Descriptive statistics: Original sample

		Means (Standard Deviations)
	Measure	*2008*
SOCIAL CHARACTERISTICS		
Male	Sample share	0.34 (0.48)
Age	Years	37.71 (8.45)
Married	Sample share	0.63 (0.48)
Education	Years	7.93 (2.12)
FINANCIAL POSITION		
Current savings	$	494.53 (746.65)
Current loans	$	391.82 (279.26)
Net financial position	$	102.78 (787.32)
PRIDE member	Sample share	1
SECTOR		
Commerce share	Share of business	0.57 (0.43)
Service share	Share of business	0.28 (0.39)
Manufacturing share	Share of business	0.11 (0.28)
Agriculture share	Share of business	0.03 (0.16)
BUSINESS OUTCOME		
Number of businesses	Total number	1.54 (0.63)
Profit	$	469.24 (372.94)

Note: The table reports mean values on key variables from the baseline survey in 2008 on the original sample. Male: Indicator variable taking the value one if the client is male. Age: The client's age, in number of years. Married: Indicator variable taking the value one if the client is married. Children living at home: The client's

number of children living in the household. Education: The client's education level, in years. Current savings: The client's total saving balance, in American dollars, including savings at PRIDE, other MFIs, informal groups, informal institutions, formal banks, with relatives, mobile savings and at home. Current loan: The client's total loan balance, in American dollars, including loan at PRIDE, other MFIs, informal groups, informal institutions, formal banks, with relatives, and at home. Net financial position: Savings-Loan, in American dollars. PRIDE member: Indicator variable taking the value one if the client is still PRIDE member. Number of businesses: The client's total number of businesses. Profit: The client's average, monthly profit, in American dollars. Commerce, service, manufacturing and agriculture share: Share of the client's businesses involved in the sector. Standard error is in parentheses.

Table A.2: Total long-term business investments (log) 2011

	Long-term business investments, with covariates	Long-term business investments, no covariates	Indicator long-term business investments, with covariates	Indicator long-term business investments, no covariates
Grant	0.293	0.381	0.080	0.100
	(0.429)	(0.411)	(0.073)	(0.069)
Grant*Female	-0.164	-0.221	-0.047	-0.060
	(0.517)	(0.515)	(0.086)	(0.086)
Female	0.080	0.128	0.023	0.035
	(0.370)	(0.361)	(0.059)	(0.057)
Sum Female	0.129	0.159	0.033	0.039
	(0.318)	(0.318)	(0.054)	(0.053)
Observations	491	491	491	491
R^2	0.042	0.009	0.034	0.008

*Note: The table reports regressions of long-term business investments (log) from 2009 to 2011, in American dollars, on treatment status. The table also report regressions of an indicator variable on long-term business investment, taking the value one if the client has made any long-term business investments the last year on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, if the client have received business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.3: Household investments (log) 2011

	Total household investments, with covariates	Total household investments, no covariates	Indicator variable household investments, with covariates	Indicator variable household investments, no covariates
Grant	-0.316	-0.015	-0.036	0.014
	(0.484)	(0.473)	(0.067)	(0.066)
Grant*Female	0.318	0.142	-0.007	-0.039
	(0.581)	(0.593)	(0.080)	(0.082)
Female	-0.054	0.072	0.035	0.050
	(0.395)	(0.390)	(0.055)	(0.054)
Sum Female	0.002	0.128	-0.043	-0.024
	(0.366)	(0.362)	(0.049)	(0.049)
Observations	491	491	491	491
R^2	0.058	0.030	0.051	0.019

*Note: The table reports regressions of the client's household investments (log) from 2009 to 2011, in American dollars, on treatment status. The table also reports regressions of an indicator variable on whether the client has made any household investments at all, taking the value one if the client has taken any investments in the house and taking the value zero if not, on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.4: Total number of businesses 2009

	Number of businesses, with covariates	Number of businesses, no covariates
Grant	0.180	0.144
	(0.127)	(0.117)
Grant*Female	-0.375**	-0.333**
	(0.155)	(0.150)
Female	0.337***	0.355***
	(0.092)	(0.091)
Sum Female	-0.195**	-0.190**
	(0.093)	(0.093)
Observations	491	491
R^2	0.107	0.085

*Note: The table reports regressions of the client's number of businesses in 2009 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.5: Sectors; service and manufacturing, 2009

	Share of businesses in the service sector, with covariates	Share of businesses in the service sector, no covariates	Share of businesses in the manufacturing sector, with covariates	Share of businesses in the manufacturing sector, no covariates
Grant	0.019	0.014	-0.007	-0.001
	(0.031)	(0.030)	(0.025)	(0.025)
Grant*Female	-0.022	-0.019	0.020	0.018
	(0.047)	(0.047)	(0.031)	(0.030)
Female	0.042	0.045	-0.042**	-0.041**
	(0.030)	(0.030)	(0.021)	(0.021)
Sum Female	-0.004	-0.006	0.013	0.017
	(0.035)	(0.034)	(0.016)	(0.016)
Observations	491	491	491	491
R^2	0.542	0.536	0.667	0.665

*Note: The table reports regressions of the client's business share in the service sector in 2009 on treatment status. The table also reports regressions of the client's business share in the manufacturing sector in 2009 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.6: Sectors; agriculture and commerce, 2009

	Share of businesses in the agriculture sector, with covariates	Share of businesses in the agriculture sector, no covariates	Share of businesses in the commerce sector, with covariates	Share of businesses in the commerce sector, no covariates
Grant	-0.003	0.009	-0.012	-0.029
	(0.016)	(0.014)	(0.042)	(0.039)
Grant*Female	0.013	0.008	-0.013	-0.007
	(0.024)	(0.024)	(0.055)	(0.055)
Female	0.012	0.019	-0.003	-0.014
	(0.012)	(0.013)	(0.036)	(0.035)
Sum Female	0.010	0.017	-0.025	-0.036
	(0.020)	(0.020)	(0.036)	(0.036)
Observations	491	491	491	491
R^2	0.501	0.481	0.510	0.506

*Note: The table reports regressions of the client's business share in the agriculture sector in 2009 on treatment status. The table also reports regressions of the client's business share in the commerce sector in 2009 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.7: Profits (log), 2009

	Profits, with covariates	Profits, no covariates
Grant	0.045	0.051
	(0.158)	(0.147)
Grant*female	-0.036	-0.024
	(0.189)	(0.187)
Female	-0.134	-0.105
	(0.132)	(0.122)
Sum Female	0.009	0.027
	(0.108)	(0.106)
Observations	491	491
R^2	0.142	0.134

*Note: The table reports regression of the client's monthly profit (log), in American dollars, in 2009 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. BG*female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.8: Sectors, service and manufacturing, 2011

	Share of businesses in the service sector, with covariates	Share of businesses in the service sector, with covariates	Share of businesses in the manufacturing sector, no covariates	Share of businesses in the manufacturing sector, with covariates
Grant	0.091**	0.110**	-0.049	-0.059
	(0.045)	(0.048)	(0.037)	(0.039)
Grant*Female	-0.058	-0.068	0.086**	0.088**
	(0.061)	(0.062)	(0.041)	(0.042)
Female	0.035	0.041	-0.095***	-0.100***
	(0.043)	(0.044)	(0.030)	(0.031)
Sum Female	0.034	0.042	0.037*	0.029
	(0.042)	(0.043)	(0.019)	(0.020)
Observations	491	491	491	491
R^2	0.236	0.248	0.403	0.413

*Note: The table reports regressions of the client's business share in the service sector in 2011 on treatment status. The table also reports regressions of the client's business share in the manufacturing sector in 2011 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*Female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Table A.9: Sectors, agriculture and commerce, 2011

	Share agriculture, no covariates	Share agriculture, with covariates	Share commerce, no covariates	Share commerce, with covariates
Grant	0.011	-0.006	-0.038	-0.041
	(0.025)	(0.024)	(0.050)	(0.053)
Grant*Female	0.000	0.009	-0.032	-0.026
	(0.031)	(0.031)	(0.070)	(0.070)
Female	0.001	-0.005	0.055	0.058
	(0.019)	(0.019)	(0.048)	(0.050)
Sum Female	0.011	0.002	-0.070	-0.066
	(0.019)	(0.020)	(0.048)	(0.050)
Observations	491	491	491	491
R^2	0.128	0.144	0.213	0.224

*Note: The table reports regressions of the client's business share in the agriculture sector in 2011 on treatment status. The table also reports regressions of the client's business share in the commerce sector in 2011 on treatment status. Grant is an indicator variable taking the value one if the client is male and in the treatment group. Grant*female is an interaction term indicating if the client is female and in the treatment group. Female is an indicator variable taking the value one if the client is female. Sum Female is a variable summing up the effect of female and treatment, the treatment effect for female. Covariates include age, education, marital status, number of employees, religion, branch, business training and the baseline value of the dependent variable. Cluster-robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*